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Eric D. Smith is currently an Associate Professor at the University of Texas at El Paso (UTEP), an R1: Research 1: Doctoral University: Very High Research Activity, a Minority Serving Institution (MSI) and a Hispanic Serving Institution (HSI). He works within the Industrial, Manufacturing and Systems Engineering (IMSE) Department, in particular with the Master of Science in Systems Engineering Program. He earned a B.S. in Physics in 1994, an M.S. in Systems Engineering in 2003, and his Ph.D. in Systems and Industrial Engineering in 2006 from the University of Arizona in Tucson, AZ. He performs research at the interface of systems engineering, cognitive science, and multi-criteria decision making.

CURRICULUM VITAE

ERIC D. SMITH

INDUSTRIAL, MANUFACTURING AND SYSTEMS ENGINEERING
(IMSE) DEPARTMENT

EDUCATION

Ph.D. Systems & Industrial Engineering, University of Arizona, 2003-2006
Minor in Electrical & Computer Engineering in the area of Parallel Computer Architecture and Networks
Dissertation: Tradeoff Studies and Cognitive Biases.
M.S. Systems Engineering, University of Arizona, 2001-2003
J.D. Northwestern California University, 2011
B.S. Physics, University of Arizona, 1990-1994, *Summa Cum Laude*.
Minor in Mathematics,
National Merit Scholar
National Hispanic Scholar
Society of Physics Students

Fellowships

NREL: National Renewable Energy Laboratory, Faculty Applied Clean Energy Science, Summer Fellowship, 2024
AFOSR: Air Force Office of Scientific Research, SFFP: Summer Faculty Fellowship Program at USAFA: U.S. Air Force Academy, 2023
NAVAIR, Navy Summer Faculty Research Program, 2020, 2021
Faculty Fellowship Program in Israel, winter 2018, http://www.ff2israel.org/
Pacific Northwest National Laboratory (PNNL), Visiting Scientist, 2010
Lockheed Martin, Summer Fellow, 2009

Professional Certificates

INCOSE ASEP Associate Systems Engineering Professional, since 2010, #00659

Awards & Honors

Citizen's Academy program, FBI: Federal Bureau of Investigation, 2019
Paul Harris Fellow, Rotary Foundation of Rotary International, 2008
Eric D. Smith and Noe Vargas-Hernandez, *Inter-Generational Mentoring for Transformative Teaching*, Gulf Southwest Conference, American Society for Engineering Education (ASEE), 2012. 3rd Place Faculty Paper Award.
Summa Cum Laude, B.S. University of Arizona, Physics, 1994

Patents

Automatic Design Assessment and Smart Analysis, Provisional Patent Application, Baldur Steingrimsson, Tathagata Ray, Eric D. Smith, and Robert Jones, U.S. Patent and Trademark Office, 2019

EXPERIENCE

Full-Time Academic Experience

University of Texas at El Paso (UTEP), Associate Professor, Industrial, Manufacturing and Systems Engineering Department, 2014-Present
ISE Undergraduate Program Director, 2018-Present
SE, IE & MFG Graduate Program Director, 2014-2017
University of Texas at El Paso (UTEP), Assistant Professor, Industrial, Manufacturing and Systems Engineering Department, 2008-2014
Missouri University of Science & Technology (formerly University of Missouri – Rolla), Lecturer, Engineering Management and Systems Engineering Department, Boeing Systems Engineering Program, 2006-2008

Research Center Experience

Global/Climate Change Working Group, UTEP Community of Practice, 2022-Present
Research Institute for Manufacturing and Engineering Systems (RIMES), Research Associate, 2008-Present
Intelligent Systems Engineering Laboratory (ISEL), Director of Systems Engineering Initiatives, 2011-Present
Center for Science, Technology, Ethics & Policy, Co-Director, 2014-Present
Center for Environmental Resources Management (CERM), Research Associate, 2010-2015

Part-Time Academic Experience

Philosophic Systems Institute, Associate, 2011 to present
Windham School District, Texas Board of Criminal Justice
National Technological University, Instructional Associate, Engineering Management & Systems Engineering, 3/04 to 5/06
University of Arizona, Research Assistant, Systems Engineering, 6/03 to 5/06
Tucson Unified School District, Substitute Teacher, PreK-12, 1/01 to 4/04
Catalina Foothills School District, Substitute Teacher, PreK-12, 9/01 to 4/04
University of Arizona, Teaching Assistant, Industrial Engineering, 8/02 to 4/03
Physics Department (University of Arizona), Research Assistant, 5/94 to 8/94

Industry Experience

NREL, Summer Fellowship, 2024
AFOSR, Summer Faculty Fellowship, AFIT, 2023
NAVAIR, Navy Summer Faculty Research Program, 2020, 2021
Faculty Fellowship Program in Israel, winter 2018
Pacific Northwest National Laboratory (PNNL), Visiting Scientist, 2010
Lockheed Martin Aeronautics Company, Summer Fellow, 2009
Petroleos de Mexico (PEMEX), Consultante, 2005

Department of Developmental Disabilities of AZ, Habilitation Technician II, 2002
GevityHR (Staff Leasing), Client Contact, 8/99 to 12/00
Eric D. Smith, CTA: Commodity Trading Advisor, 5/95 to 5/99
Macro Trading Corporation, Research Assistant, 9/94 to 5/97
Macromex S.A., Technician, 4/90 to 5/94

PUBLICATIONS

Peer-Reviewed Journal Articles

Nadio Olivar, Eric Smith, *Fast Fashion Consumption and Its Environmental Impact: A Literature Review*, Sustainability: Science, Practice and Policy (TSUS), Volume 20, Issue 1, 2024

Yasser Davizon, Neale Smith, Jaime Sanchez and Eric Smith, *Mathematical Modeling of Dynamic Supply Chains Subject to Demand Fluctuations*, Engineering, Technology & Applied Science Research, Vol. 13 No. 6, December 2023, https://www.etasr.com/index.php/ETASR/article/view/6491

Francisco Zapata, Eric Smith, Vladik Kreinovich, *Unreachable Statements Are Inevitable in Software Testing: Theoretical Explanation*, Uncertainty, Constraints, and Decision Making 2023: 305-309

S.M. Atikur Rahman, Iqtiar Md Siddique, Eric Smith, *Analyzing Bitcoin's Decentralization: Coefficient of Variation Approach and 21 Million Divisibility*, Advancement of IoT in Blockchain Technology and its Applications, MAT Journals, Volume-2, Issue-3 (September-December, 2023), Uttar Pradesh, India, www.matjournals.com, e-ISSN: 2583-7826, https://doi.org/10.46610/AIBTIA.2023.v02i03.002

Franziska Renz, Richard Posthuma, Eric Smith, *Extending the Boundaries of Psychological Ownership Research: Measurement, Outcomes, Cultural Moderators* (CCSM-05-2021-0074), Cross Cultural & Strategic Management, 2022

Carlos Chang, Johanes Makahaube, Adeeba Raheem, Eric Smith, and Syeda Lamiya Mahnaz, Using System Dynamics Method to Measure Project Management Performance of Local Government Agencies, Businesses journal, 2022, 2, 376–395, https://doi.org/10.3390/businesses2040024

Aditya Akundi and Eric Smith, Quantitative Characterization of Complex Systems— An Information Theoretic Approach, Applied System Innovation journal, 4(4) 99, 2021, https://www.mdpi.com/2571-5577/4/4/99

Aditya Akundi and Eric Smith, *Information Theory as a Basis for Characterizing Complex Technical and Socio-Technical Systems*, Applied System Innovation journal, 2021

Griselda Acosta, Eric Smith, Olga Kosheleva and Vladik Kreinovich, *Epicycles are Almost as Good as Trigonometric Series: General System-Based Analysis*, Applied Mathematical Sciences, Vol. 13, 2019, no. 16, 769-773, https://doi.org/10.12988/ams.2019.97103

Griselda Acosta, Eric Smith, and Vladik Kreinovich, *Optimal Distribution of Testing Resources between Different System Levels*, Journal of Uncertain Systems, 13(2) 84-88, 2019, www.jus.org.uk

Griselda Acosta, Eric Smith, and Vladik Kreinovich, *Why High-Level Attention Constantly Oscillates: System Based Explanation*, International Journal of Computing, ISSN 1727-6209, 2019

Griselda Acosta, Eric Smith, and Vladik Kreinovich, *80/20 Rule Partially Explains 7±2 Law: General System-Based Analysis*, International Mathematical Forum, 14(5): 205-208, 2019, DOI:10.12988/imf.2019.9833

Griselda Acosta, Eric Smith, and Vladik Kreinovich, *Why Pink Noise Is Best for Enhancing Sleep and Memory: System-Based Explanation,* Applied Mathematical Sciences, 2019

Griselda Acosta, Eric Smith, and Vladik Kreinovich, *A Simple Model of Cognitive Tradeoff Phenomenon,* Departmental Technical Reports (CS). 2019 https://scholarworks.utep.edu/cs_techrep/1282

Griselda Acosta, Eric Smith, and Vladik Kreinovich, *Unexpected Empirical Dependence on Calf Gender on Insemination Time: System-Based Explanation,* Applied Mathematical Sciences, 2019

Griselda Acosta, Eric Smith, and Vladik Kreinovich, *Why Patients do not Always Follow Doctor's Advice: Systems Approach Explains Empirical Observation,* Mathematical Structures and Modeling, 2019, DOI: 10.25513/2222-8772

Griselda Acosta, Eric Freudenthal, Eric Smith, and Vladik Kreinovich, *Why Filtering Out Higher Harmonics Makes It Easier to Carry a Tune,* Applied Mathematical Sciences, Vol. 13, no. 16, 775 – 779, 2019, HIKARI Ltd, www.m-hikari.com, https://doi.org/10.12988/ams.2019.97104

Aditya Akundi, Eric Smith, and Tzu-Liang Tseng, *Information Entropy Applied to Software based Control Flow Graphs*, International Journal of Systems Assurance Engineering and Management, 9(5): 1080-1091, October 2018, https://rdcu.be/3uBk https://doi.org/10.1007/s13198-018-0740-y

Aditya Akundi, Francisco Zapata and Eric D. Smith, *Unified Modeling Language (UML) Interpretation and Test Suite generation of Complex Systems*, ITEA (International Test & Evaluation Association) Journal, 35(1), March 2014.

Francisco Zapata, Aditya Akundi, Ricardo Pineda, Eric D. Smith, *Basis Path Analysis for Testing Complex System of Systems,* Procedia Computer Science 20, pp. 256-261, 2013.

Eric D. Smith, *Gödel's Incompleteness and Consistency Theorems Elucidated with Principles of Abstraction Levels, Complementarity, and Self-Reference,* Philosophy of Mathematics Education Journal, No. 27, 2013, ISSN 1465-2978

Aditya Akundi and Eric D. Smith, *INCOSE SE Handbook v3.2 Integration, Verification & Validation (IV&V) Via Design Structure Matrix (DSM) Analysis of Context Diagrams Set*, ITEA (International Test & Evaluation Association) Journal, Volume 34, Number 4, December edition, 2013.

Eric D. Smith, Aditya Akundi and Milad Zarei, *Collective Cognitive Epidemiology: Introducing Subjective Parameters into Disease Spread Models*, posted in Peer-J Pre-Prints, accepted in Open Journal of Epidemiology, Scientific Research publishers, 2013.

Eric D. Smith and A. Terry Bahill, *Attribute Substitution in Systems Engineering*, Systems Engineering, International Council on Systems Engineering (INCOSE), John Wiley & Sons, Inc., 2nd quarter 2010, 13(2)

Eric D. Smith and Odin A. Smith, *Legal Reasoning and Mental Mistake Amelioration,* Irish Student Law Review, Honorable Society of King's Inns, 2010, (17)1, 41 pages single spaced

Terry Bahill and Eric D. Smith, Engineering Management Journal, American Society for Engineering Management, *An Industry Standard Risk Analysis Technique*, 2009, 21(4)

Eric D. Smith, William Siefert and David Drain, Systems Engineering, International Council on Systems Engineering (INCOSE), John Wiley & Sons, Inc., *Risk Matrix Input Data Biases*, 2009, 12(4)

Eric D. Smith, Ferenc Szidarovszky, William J. Karnavas, and Terry Bahill, The Open Cybernetics & Systemics Journal, Bentham Open, *Sensitivity Analysis: A Powerful System Validation Technique*, 2008, Vol. 2, 39-56

Terry Bahill, Ferenc Szidarovszky, Rick Botta, and Eric D. Smith, International Journal of General Systems, Taylor & Francis, *Valid Models Require Defined Levels*, 2008, 37(5)

Eric D. Smith, Young Jun Son, Massimo Piattelli-Palmarini and Terry Bahill, Systems Engineering, International Council on Systems Engineering (INCOSE), John Wiley & Sons, *Ameliorating Mistakes in Tradeoff Studies*, 2007, 10(3), 222-240

Journal Articles under review

Juan Acosta Guadarrama, Juan Ferret, Eric Smith, *Towards a Unified Framework for Debugging Systems Requirements Specifications Translated into ASP Logic Predicates: Design and Implementation,* submitted to Transactions on Computational Logic, 2023

Yasser A. Davizón *, Jesús Mateo Amillano-Cisneros, José Belisario Leyva Morales, Carlos Hernández-Santos, Eric D. Smith, Jaime Sánchez-Leal, Blasioz Valenzuela-Saquelarez, Elìas Olivares-Benítez, Ricardo A. Ramírez-Mendoza, Neale R. Smith, *Mathematical modeling for infinite and finite dimensional production-inventory systems subject to demand fluctuation*, 2023, Doi: 10.20944/preprints202307.2127.v1, https://www.preprints.org/manuscript/202307.2127/v1

Yasser A. Davizón , Jesús Mateo Amillano-Cisneros, Carlos Hernández-Santos, Eric D. Smith, Blasioz Valenzuela-Saquelarez, Neale R. Smith, *Mathematical Modeling for High Volume Production-Inventory Systems Subject to Demand Fluctuation*, Mathematics journal, mathematics-2097732, 2022

Johanes Makahaube, Carlos M. Chang, Adeeba A. Raheem, Eric D. Smith, *Knowledge Assessment of Project Management Processes to Improve Local Government Organizational Performance*

Francisco Zapata, Eric Smith, and Vladik Kreinovich, *Systems Approach Explains Why Low Heart Rate Variability Is Correlated with Depression (and Suicidal Thoughts)*

Aditya Akundi and Eric Smith, *Information Entropy as a Basis for Classroom Structural Assessment*, submitted to Theory and Research in Education.

Eric Smith, Aditya Akundi, and Manish Khadtare *Fractal-COSYSMO Systems Engineering Cost Estimation for Complex Networks*, submitted to International Journal of Systems Assurance Engineering and Management

Journal Articles in preparation

Francisco Zapata, Eric Smith, and Vladik Kreinovich, *Systems Approach Explains Why Low Heart Rate Variability Is Correlated with Depression (and Suicidal Thoughts)*

Juan Acosta Guadarrama, Juan Ferret, and Eric Smith, *Towards Debugging Systems Requirements in ASP*

Neale R. Smith, Jose M. Sanchez and Eric D. Smith, *Extending Mass Customization Configurator Functionality for Shipment Date Estimation and Quotin*g, submitted to the Journal of Intelligent Manufacturing.

Eric D. Smith and Bharath Dantu, *Complex Systems Decision Making with a Hybrid System Dynamics Zachman Framework*

Lidia Zamarron and Eric Smith, *System Architecture Declarative Semantic Formal Versions to Debug Knowledge Databases*

Invited Papers

Eric D. Smith, *Teoremas de Gödel Sobre Condiciones de Ser Incompleto y Consistente Elucidados con Principios de Niveles de Abstracción, Complementariedad, y Auto-Referencia*, RCCS-SPIDTEC2 2017: Foundations, Research and Spread of Emerging Technologies in Computing Sciences 2017, CEUR Workshop Proceedings, http://ceur-ws.org/Vol-2031/, ISSN 1613-0073

Eric D. Smith, Neale E. Smith, and Jagadish Thimiri, *An Economic Argument for Drug Legalization*, CIBS: Center for Inter-American and Border Studies, UTEP, 2017

Trade Journal Publications

Eric D. Smith, Non-Determinism in Systems Engineering, appeared in "Systems of the Third Kind: Distinctions, Principles, and Examples, INSIGHT magazine of INCOSE, 2012.

BOOKS

Eric D. Smith, Bar Exam Review: Visual Law: Graphical Alternative to the 1000 Year Old Orthodoxy of Prose-Based Outlines, Outskirts Press, 2018, 354 pages.

Eric D. Smith, Bar Exam Review: Complementary Model-Based Systems Engineering of Law: Graphical Alternative to the 1000 Year Old Orthodoxy of Prose-Based Outlines, Outskirts Press, 2014, 349 pages.

Eric D. Smith, *Parallel Attribute Decisions in the Presence of Human Mistakes: Correcting the Placement of Attention via Holistic, Systemic Thinking*, Verlag Dr. Müller Publishing, 2010, ISBN# 978-3-639-25163-0, book, 190 pages.

Chapters in Books

Francisco Zapata, Vladik Kreinovich, and Eric Smith, Book *Why Moving Fast and Breaking Things Makes Sense?*, in Recent Developments and the New Directions of Research, Foundations, and Applications, 2023, DOI: 10.1007/978-3-031-23476-7_5

Francisco Zapata, Eric Smith, Vladik Kreinovich and Hoang-Phuong Nguyen, *Why Normalized Difference Vegetation Index (NDVI)?*, in Biomedical and Other Applications of Soft Computing, Springer, 2023

Griselda Acosta, Eric Smith and Vladik Kreinovich, *A Natural Explanation for the Minimum Entropy Production Principle*, in: Ceberio M., Kreinovich V. (eds) How Uncertainty-Related Ideas Can Provide Theoretical Explanation For Empirical Dependencies. Studies in Systems, Decision and Control, vol 306. Springer, Cham, Switzerland, 2021 https://doi.org/10.1007/978-3-030-65324-8_2

Acosta G., Smith E., Kreinovich V. (2021) Status Quo Bias Actually Helps Decision Makers to Take Nonlinearity into Account: An Explanation. In: Ceberio M., Kreinovich V. (eds) How Uncertainty-Related Ideas Can Provide Theoretical Explanation For Empirical Dependencies. Studies in Systems, Decision and Control, vol 306. Springer, Cham. https://doi.org/10.1007/978-3-030-65324-8_1

Richard A. Posthuma, Claudia Noemi Gonzalez Brambila, Eric D. Smith, and Yang Zhang, *Employee Turnover and Retention in Mexica and Latin America*, in Global Talent Retention: Understanding Employee Turnover Around the World, Emerald Publishing, 2021.

Acosta G., Smith E., Kreinovich V. (2020) *Analytical Techniques in Hypothesis Testing: Why Area Under the Curve?*, in: Towards Analytical Techniques for Systems Engineering Applications. Studies in Systems, Decision and Control, vol 286. Springer, Cham. https://doi.org/10.1007/978-3-030-46413-4_11

Acosta G., Smith E., Kreinovich V. (2020) Analytical Techniques for Analyzing Probability Distributions: How to Explain That Changes in Elderlies Depression Level Are Uniformly Distributed. In: Towards Analytical Techniques for Systems Engineering Applications. Studies in Systems, Decision and Control, vol 286. Springer, Cham. https://doi.org/10.1007/978-3-030-46413-4_4

Acosta G., Smith E., Kreinovich V. (2020) It Is Important to Revisit the Selection of the Best Model When New Data Appear: Why Confirmation Bias is a Faulty Strategy. In: Towards Analytical Techniques for Systems Engineering Applications. Studies in Systems, Decision and Control, vol 286. Springer, Cham, Switzerland, https://doi.org/10.1007/978-3-030-46413-4_12

Griselda Acosta, Eric Smith and Vladik Kreinovich, *Case When Analytical Techniques Invalidate the Conclusions of Data Mining: Reversed Flynn Effect of Decreasing IQ Test Scores*, in: Towards Analytical Techniques for Systems Engineering Applications. Studies in Systems, Decision and Control, vol 286. Springer, Cham, Switzerland, 2020, https://doi.org/10.1007/978-3-030-46413-4_10

Richard A. Posthuma, Eric D. Smith, Jase R. Ramsey, and Yang Zhang, *Working in Danger Zones: Customized Risk Management for Expat Occupations*, chapter in Contemporary Work and the Future of Employment in Developed Countries, p18, 1st Edition, ImprintRoutledge, 2020, eBook ISBN 9781351034906

Richard Posthuma, Cody Cox, Fabian Delgado Castro, and Eric D. Smith, *Managing Age Diversity*, Oxford Research Encyclopedia of Business and Management, Oxford University Press. doi:10.1093/acrefore/9780190224851.013.190, 2019

Eric D. Smith, *Teoremas de Gödel Sobre Condiciones de Ser Incompleto y Consistente Elucidados con Principios de Niveles de Abstracción, Complementariedad, y Auto-Referencia*, Libro de Logica, Mexico, 2018

Eric D. Smith and Aditya Akundi, *Enterprise Transformation from the Ground Up: Addressing Individual Perceptual and Behavioral Biases as Scaling Fractals to Create Emergent State Changes*, in Advances in Systems Engineering Research, Nova Publishers, 2013.

Ricardo L. Pineda and Eric D. Smith, *Functional Analysis & Architecture*, Systems Engineering and Methods, National Aeronautics and Space Administration (NASA), Ali Kamrani and Maryam Azimi editors, 2010, pp. 35-79.

Eric D. Smith, *Enhancing Intuition by Examining Continuous and Discrete Models of Systems Engineering and Quantum Mechanics*, Psychology of Intuition, Nova Publishers, Bartoli Ruelas and Vanessa Briseno editors, 2010, pp. 35-79.

Eric D. Smith, Massimo Piattelli-Palmarini, and Terry Bahill, *Cognitive Biases Affect the Acceptance of Tradeoff Studies*, Decision Modelling and Behaviour in Complex and Uncertain Environments, Springer, T. Kugler, J. C. Smith, T. Connolly and Y. J. Son editors, 2008, pp. 227-249.

Industry Reports, Technical Reports, and Monographs

Green Vegetation Futures, Open-Source Ubiquitously Available Vegetation Health Geographic Indexing for Financial Enablement, NDVI: Normalized Difference Vegetation Index for Afforestation and Reforestation, Report for Exchanges and Governments, presented to the CME (Chicago Mercantile Exchange) Group, 2020

Griselda Acosta, Manuel Hernandez, Natalia Villanueva-Rosales, Eric Smith, and Vladik Kreinovich, *Why Matrix Factorization Works Well in Recommender Systems: A Systems-Based Explanation,* Technical Report: UTEP-CS-19-67, 2019

Eric D. Smith, *FTA: Fault Tree Analyses, Risk Analysis, and RBD: Reliability Block Diagrams of Water Spray System for Recirculation (RECIRC) Fan,* Gillespie & Powers, 2019

Griselda Acosta, Eric Smith, and Vladik Kreinovich, *Dunning-Kruger Effect: A Simple System-Based Explanation,* CS Department Technical Reports, UTEP, 2019

Margarita Muro, Louis Steinmetz, Bhriannon Tiscareno, Angel de la Rosa, Eric D. Smith, *Technology Management Process User Guide*, Lockheed Martin, 2016

Arturo Martinez, Alberto Guerrero, Pablo Bustamante and Eric D. Smith, *Tutorial for Technology Management and Diminishing Manufacturing Sources and Material Shortages*, Lockheed Martin Aeronautics, 2015

Arturo Martinez, Alberto Guerrero, Eric D. Smith, *Technology Management and Diminishing Manufacturing Sources and Material Shortages*, Lockheed Martin Aeronautics, 2014

Sergei Alderman, David Herrera, Luis Berumen, Christopher Genera, Hector Valles, and Eric D. Smith, *Analysis of Direct Labor Incentives and Conclusions on Attributes of Successful Incentive Programs,* Lockheed Martin Aeronautics, 2014

Aditya Akundi and Eric Smith, *Collective Cognitive Epidemiology: Introducing Subjective Parameters into Disease Spread Models*, 2013, DOI: 10.7287/peerj.preprints.49

Systems Engineering Program Review, to the Texas Higher Education Coordinating Board, 2013

Ricardo Pineda, Juan Pablo Fernandez, Ismael Velarde, Raul Ruiz, Eric D. Smith, *Integrated Systems Health Management*, Lockheed Martin Aeronautics, 2013

Raul Ruiz, Joel Quintana, Mario Chavez, Ricardo Pineda, Eric D. Smith, *Electromagnetic Effects Engineering (EEE) Framework and Data Set for Introductory Course*, Lockheed Martin Aeronautics, 2013

Aditya Akundi, Sergio Luna Fong, Jorge Regalado, Carlos Sánchez, Aggrey Chirchir and Eric D. Smith, *Student Busing System: Customer Need Surveys, Technical Design, Marketing and Drive to a Student Referendum,* Green Fund of the Student Government Association (SGA) of UTEP, 2013.

Amanda Posadas, Ricardo Pineda and Eric D. Smith, *TRAM: Technology Refreshment Assessment Model: Verification and Validation Testing with Combinatorial and Pairwise Techniques*, Lockheed Martin Aeronautics, 2012.

Jose Flores, Ismael Velarde, Eric D. Smith and Ricardo Pineda, *Unified Profile for DoDAF and MoDAF (UPDM) Tutorial for IBM Rational Rhapsody*, Lockheed Martin Aeronautics, 2012.

Aditya Akundi, Sergio Luna Fong, Jorge Regalado, Carlos Sánchez and Eric D. Smith, *Student Busing System: Systems Engineering Analysis*, Green Fund of the Student Government Association (SGA) of UTEP, 2012, 159 pages.

Stefan Hempel, Pablo Rangel, Ryan Price, Eric D. Smith, Ricardo Pineda, *Energy Dashboard System*, Green Fund of the Student Government Association (SGA) of the University of Texas at El Paso (UTEP), 2011, 147 pages.

Eric D. Smith, Matthew Hernandez, Aaron Martinez and Federico Esquivel, *Thermostatic Device Demand Response Model Investigated with Continuous Models, Discrete Simulations, and Calibration with Olympic Peninsula Project Data*, GridWise Project, Electricity Infrastructure Division, Energy & Environment Directorate, Pacific Northwest National Laboratory (PNNL), Department of Energy (DoE) and National Science Foundation (NSF), 2010, 35 pages.

Eric D. Smith and Henson Graves, *Attribute Based Modeling & Architecting*, Specialty Engineering, Air Systems Design & Integration, Lockheed Martin Aeronautics Company, 2009, 60 pages.

Aaron Prokopchuk, Jose Falliner and Eric D. Smith, *Technology Refreshment Assessment Model Project II*, Lockheed Martin Corporation, 2009.

David Delgado, Nathan Pierluissi and Eric D. Smith, *Technology Refreshment Assessment Model Project I*, Lockheed Martin Corporation, 2008.

Adrian Rios, Ricardo Pineda and Eric D. Smith, Cargo Airplane Radar Enhancement Engineering Report, Lockheed Martin Corporation, 2008.

Tutorials

Eric D. Smith, *Tradeoff Studies, Techniques and Biases*, Enchantment Chapter of the International Council on Systems Engineering, Albuquerque, NM, 2014.

Eric D. Smith, *Tradeoff Studies and Cognitive Biases*, 21st International Conference on Systems Engineering, Las Vegas, NV 2011.

Eric D. Smith, *Bias Amelioration in Tradeoff Studies,* International Symposium of the International Council on Systems Engineering, Denver, CO, 2011.

Eric D. Smith, *Associate Systems Engineering Professional (ASEP) Certification Preparation*, as Advisor to the UTEP-INCOSE Student Division of the Enchantment Chapter of INCOSE (International Council on Systems Engineering), UTEP, 2010.

Thomas Tenorio and Eric D. Smith, *Whole Systems Approach to UAST (Unmanned Aerial System Testing) in LVC (Live Virtual Constructive) Environments: Attribute Base Architecting segment*, Live Virtual Constructive (LVC) Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2010.

Eric D. Smith, *Tradeoff Studies, Techniques and Biases*, Enchantment Chapter of the International Council on Systems Engineering, Albuquerque, NM, 2009.

Invited Talks

Eric D. Smith, *Cognitive Biases in the Risk Matrix*, seminar; Purdue University, Systems Collaboratory and Industrial Engineering Department, 2018

Eric D. Smith, *Systems Engineering Fundamentals*, WSMR: White Sands Missile Range, 2017

Eric D. Smith, *Cognitive Biases in Decision Making*, seminar; Rose-Hulman Institute of Technology, Engineering Management Department, 2017

Eric D. Smith, *A New Way to Think About Risk,* Midwest Gateway Chapter of the International Council on Systems Engineering, The Boeing Company, St. Louis, MO, May 2008.

Eric D. Smith, *Bar Examinee Mental Mistakes,* Tucson Workshop on Computational and Behavioral Decision Making, Air Force Office of Scientific Research (AFOSR), 2008, MURI F49620-03-1-04-44.

Invited Panels

Student Divisions Education Outreach, Student Divisions of INCOSE Program Panel, International Symposium of the International Council on Systems Engineering, Philadelphia, PA, 2013

Supplemental Training for the Newly Graduated Engineer, International Conference on Systems Engineering, Las Vegas, NV, 2011

Youth Engineering Education Outreach, Student Divisions of INCOSE Program Panel, International Symposium of the International Council on Systems Engineering, Denver, CO, 2011

Conference Proceedings

Marco Rosa and Eric Smith, Effective Integration of Diverse Engineering Competencies in the Development of Complex STEM Projects: Optimizing Efforts and Investments in Student-Led Research Projects, WSRC: Western States Regional Conference of INCOSE, Albuquerque NM, 2024.

Eric Smith, Iqtiar Siddique, Vladik Kreinovich, Richard Posthuma, *Hierarchical Model of Unreliable Systems in Comparison to an Anti-Fragile Replacement System*, IISE Conference 2024

Francisco Zapata, Eric Smith, and Vladik Kreinovich, *Unexpected Economic Consequence of Cloud Computing: A Boost to Algorithmic Creativity*, 15th International Workshop on Constraint Programming and Decision Making (CoProD), Halifax, Nova Scotia, Canada, May 30, 2022

Francisco Zapata, Eric Smith, Olga Kosheleva, Vladik Kreinovich, Seemingly Counter-Intuitive Features of Good-to-Great Companies Actually Make Perfect Sense: Algorithmics-Based Explanations, IEEE 11th International Conference on Intelligent Systems (IS), 2022

Francisco Zapata, Eric Smith and Vladik Kreinovich, *Why Moving Fast and Breaking Things Makes Sense?*, WCONSC2021, 8th World Conference on Soft Computing, Baku, Azerbaijan, February 03-05, 2022

Francisco Zapata, Eric Smith, Vladik Kreinovich and Hoang-Phuong Nguyen, *Why Normalized Difference Vegetation Index (NDVI)?,* AICI2022: Third International Conference on Artificial Intelligence and Computational Intelligence, 2022

Dia Abusal and Eric Smith, *Project Management and Systems Engineering*, International Conference on Systems Thinking in Portfolio Management and Project Management ICSTPMPM, August, New York, 2021.

Franziska Maria Renz, Richard Posthuma, and Eric Smith, *Testing Boundaries of Psychological Ownership Research: Measurement, Outcomes, Cultural Moderators*, Academy of Management, annual meeting, 2019

Aditya Akundi, Bill Tseng, Subbalakshmi Mandapaka, and Eric Smith, *Understanding the Trends of Autonomous Systems over the Last Decade,"* IEEE 15th International Conference on Automation Science and Engineering (CASE), Canada, 2019

Aditya Akundi, Bill Tseng, Francisco Aguirre, Subbalakshmi Mandapaka, and Eric Smith, *Text Mining to Understand the Influence of Social Media Applications on Smartphone Supply Chain*, Complex Adaptive Systems Conference, 2018.

Aditya Akundi, Eric Smith, Bill Tseng, and Ileana Rubio, *INCOSE SE Handbook v3.2 and v4.0 Analysis of Context Diagrams Set*, IEEE SysCon 2018

Aditya Akundi, Eric Smith, Bill Tseng, and Ileana Rubio, *An Attempt to Understand Information Processing Capability in Complex Networks*, IEEE SysCon 2018

Aditya Akundi, Eric Smith, Bill Tseng, and Ileana Rubio, *Quantifying System Structural Complexity using Design Structure Matrices*, IEEE SysCon 2018

Aditya Akundi, Tzu-Liang Tseng, Md. Fashiar Rahman, and Eric Smith, *Non-Destructive Testing (NDT) and Evaluation using Ultrasonic Testing Equipment to Enhance Workforce Skillset for Modern Manufacturing*, ASEE: American Society of Engineering Education conference, 2018

Eric Smith, Juan Acosta Guadarrama, Juan Ferret, *Lean Manufacturing Principles Applied to the Engineering Classroom*, ASEE Annual Conference, 2017

Bill Tseng, Aditya Akundi, and Eric Smith, *Integration of Additive Manufacturing Technology in Curricula to Enhance Concept Based Learning*, ASEE Annual Conference, 2017

Bill Tseng, Aditya Akundi, and Eric Smith, Workshops and Seminar Series to Enhance and Create Opportunities for Innovation in Green Manufacturing and Engineering, ASEE Annual Conference, 2017

Bill Tseng, Aditya Akundi, and Eric Smith, *Comparative Study of Teaching Lean Manufacturing Via Hands-On and Computer-Aided Simulation*, ASEE Annual Conference, 2016

Bill Tseng, Aditya Akundi, and Eric Smith, *Enhancement of Sustainable Manufacturing through Workshop and Seminars in Engineering Education*, ASEE Annual Conference, 2016

Bill Tseng, Aditya Akundi, and Eric Smith, *Integration of Additive Manufacturing Technology in Curricula to Enhance Concept-Based Learning*, ASEE Annual Conference, 2016

Bill Tseng, Aditya Akundi, and Eric Smith, *Social Network Platforms in Educational Settings – A Network Analysis Approach to Analyze Online Student Interactions*, ASEE Annual Conference, 2016

Bill Tseng, Aditya Akundi, and Eric Smith, *Technology Integration Across Additive Manufacturing Domain to Enhance Student Classroom Involvement*, ASEE Annual Conference, 2016

Bill Tseng, Richard Chiou, Aditya Akundi and Eric D. Smith, *Augmenting High School Student Interest in STEM Education Using Advanced Manufacturing Technology*, Proceedings of the American Society for Engineering Education Conference, 2015.

Bill Tseng, Richard Chiou, Aditya Akundi and Eric D. Smith, *Enhancement of Green Energy Manufacturing Engineering Education through Project Based Learning and Leadership Workshops*, Proceedings of the American Society for Engineering Education Conference, 2015.

Oscar Mondragon, Jagadish Thimiri, and Eric D. Smith, *Experiments with Personal Ownership of Quality at the University of Texas*, Frontiers in Education conference, IEEE, 2015.

Eric D. Smith and Oscar Salcedo, *Jury Procedures for Systems Engineering Decision Making*, Proceedings of the American Society for Engineering Education Conference, 2015.

Jagadish Thimiri and Eric D. Smith, *Synergy and Emergence in Systems Engineering*, 15th System-of-Systems Engineering Workshop: Reducing Risk in 2020, International Test & Evaluation Association (ITEA), El Paso, TX, 2015.

Jagadish Thimiri and Eric D. Smith, *Enhancing System Engineering Processes*, 15th System-of-Systems Engineering Workshop: Reducing Risk in 2020, International Test & Evaluation Association (ITEA), El Paso, TX, 2015.

Aditya Akundi and Eric D. Smith, *UML Interpretation and Test Suite Generation for Complex Systems,* 15th System-of-Systems Engineering Workshop: Reducing Risk in 2020, International Test & Evaluation Association (ITEA), El Paso, TX, 2015

Jagadish Thimiri and Eric D. Smith, *Decomposition Trees to capture and understand requirements categories,* Systems of Systems Conference: A Network Integration Evaluation (NIE) Experience, International Test & Evaluation Association (ITEA), El Paso, TX, 2014.

Bill Tseng, Richard Chiou, Paras Mandal, Eric Smith, Radian Belu, Oscar Salcedo, *Fusing Green Energy into Manufacturing Engineering Education to Cultivate Technical Success,* 121st ASEE Annual Conference & Exposition, American Society for Engineering Education, Indianapolis, IN, 2014.

Eric Smith, Bill Tseng, Paras Mandal and Aditya Akundi, *Attributions Biases in Mentoring & Teaching Green Energy Manufacturing*, Alliance of Hispanic Serving Institutions Educators conference, 2014.

Aditya Akundi, Paras Mandal, Eric D. Smith, and Bill Tseng, *Overview of wind power generation impact on electricity market prices*, 4th Southwest Energy Science and Engineering Symposium, El Paso, TX, 2014.

Tseng, B., Mandal, P. and Smith, E. *"Fusing Green Energy into Manufacturing Engineering Education to Cultivate Professional Success through Leadership Workshops,"* Proceedings of the American Society for Engineering Education 2014 Conference, Indianapolis, IN, June 15 - 18, 2014.

Francisco Zapata, Aditya Akundi, Ricardo Pineda, and Eric Smith, *Basis Path Testing for Complex Systems of Systems*, Complex Adaptive Systems Conference, Baltimore, 2013

Aditya Akundi and Eric D. Smith, *Understanding Possible Biases and Attributions in Mentoring and Teaching: Classroom Educational Enhancements Driven by Addressing Individual Perceptual and Behavioral Biases*, University of New Mexico, Mentoring Institute Conference, Albuquerque, NM, 2013.

Eric D. Smith and Aditya Akundi, *A four-year experience with the graduate curriculum for Systems Engineering at UTEP and its convergence/divergence with the Graduate Reference Curriculum for Systems Engineering (GRCSE)*, 120th Annual Conference & Exposition of the American Society of Engineering Education (ASEE), Atlanta, GA, 2013.

Odin Smith, Oscar Salcedo and Eric D. Smith, *Applying Jury Trial Process Wisdom to Tradeoff Studies: Hybridization Of Systems Engineering And The Laws*, Systems of Systems Conference: A Network Integration Evaluation (NIE) Experience, International Test & Evaluation Association (ITEA), El Paso, TX, 2013.

Sergio-Luna Fong, Aditya Akundi, Eric D. Smith, *Systems Engineering Approach to University of Texas at El Paso Transit System*, Systems of Systems Conference: A Network Integration Evaluation (NIE) Experience, International Test & Evaluation Association (ITEA), El Paso, TX, 2013.

Francisco Zapata, Amanda Posadas, Aditya Akundi and Eric D. Smith, *Combinatorial Black Box Testing for Genetic Algorithms with Discrete and Continuous Variables and Potential Applications for General Testing Methods*, Systems of Systems Conference: A Network Integration Evaluation (NIE) Experience, International Test & Evaluation Association (ITEA), El Paso, TX, 2013.

Danial Zaghi, Aditya Akundi and Eric D. Smith, *Model Concluded from Operation Research for Confronting Manufacturing Systems with Threats and Pressure Tools*, Test & Evaluation of Systems of Systems Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2013.

Lidia Zamarron and Eric Smith, *System Architecture Declarative Semantic Formal Versions to Debug Knowledge Databases*, Systems of Systems Conference: A Network Integration Evaluation (NIE) Experience, International Test & Evaluation Association (ITEA), El Paso, TX, 2013.

Aditya Akundi and Eric D. Smith, *INCOSE SE Handbook v3.2 Integration, Verification & Validation (IV&V) Via Design Structure Matrix (DSM) Analysis of Context Diagrams Set,* Test & Evaluation Systems of Systems Conference: A Network Integration Evaluation (NIE) Experience, International Test & Evaluation Association (ITEA), El Paso, TX, 2013.

Francisco Zapata, Aditya Akundi, Eric D. Smith, *Interpretation of the DoDAF Operational Views using Unified Modeling Language (UML)*, Test & Evaluation of Systems of Systems Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2013.

Danial Zaghi, Mohsen Momeni Tabar, Amir Nikpey, Aditya Akundi and Eric D. Smith, *Model of Balanced Transportation Roads for Reduced Traffic*: *A Quantitative Model Approach to Address Traffic Congestion,* Test & Evaluation of Systems of Systems Conference: A Network Integration Evaluation (NIE) Experience, International Test & Evaluation Association (ITEA), El Paso, TX, 2013.

Aditya Akundi, Francisco Zapata and Eric D. Smith, *UML Profile and Extensions for Complex Systems with Complementary Levels of Abstraction,* Science Direct, Procedia Computer Science, Elsevier, Complex Adaptive Systems Conference, Washington, DC, 2012.

Eric D. Smith and Noe Vargas-Hernandez, *Escaping the Feeling of Subjugation through Inter-Generational Mentoring,* UNM Mentoring Institute Conference: Facilitating Developmental Relationships for Success, Albuquerque, NM, 2012.

Eric D. Smith, *Creating Innovative Equality in the Engineering Classroom,* Gulf Southwest Conference, American Society for Engineering Education (ASEE), El Paso, Texas, 2012.

Eric D. Smith and Noe Vargas-Hernandez, *Inter-Generational Mentoring for Transformative Teaching*, Gulf Southwest Conference, American Society for Engineering Education (ASEE), El Paso, Texas, 2012. Chosen for the 3rd Place Faculty Paper Award.

Bharath Dantu and Eric D. Smith, *Complex System Modeling, Testing and Re-Engineering with Complementary Methods for System Dynamics*, Test & Evaluation of Systems of Systems Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2012.

Francisco Chagolla and Eric D. Smith, *Assessment of DoDAF as an Architectural Framework Evolving toward Syntactic and Semantic Completeness*, Test & Evaluation of Systems of Systems Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2012.

Stefan Hempel, Eric D. Smith and Ricardo Pineda, *Energy Dashboard Sponsored by the Green Fund of the Students of the University of Texas at El Paso*, Test & Evaluation of Systems of Systems Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2012.

Eric D. Smith, *Risk Analysis and Mitigation Tendencies as Interpreted by Cognitive Science*, Test & Evaluation of Systems of Systems Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2012.

Eric Smith, Aditya Akundi and Ramakanth Gona, *Enterprise Experimentation and Influence Management through Aspects and Levels: Zachman-Bayesian Approach*, Procedia Computer Science 6:82-87, December 2011 DOI:10.1016/j.procs.2011.08.017

Stefan Hempel and Eric D. Smith, *Self-Reference as a Principal Indicator of Complexity with a Zachman Emphasis*, Science Direct, Procedia Computer Science, Elsevier, Complex Adaptive Systems Conference, Chicago, IL, 2011.

Manish Khadtare and Eric D. Smith, *Fractal-COSYSMO Systems Engineering Cost Estimation for Complex Projects*, Science Direct, Procedia Computer Science, Elsevier, Complex Adaptive Systems Conference, Chicago, IL, 2011.

Bharath Dantu and Eric D. Smith, *Medical Process Modeling with a Hybrid System Dynamics Zachman Framework*, Science Direct, Procedia Computer Science, Elsevier, Complex Adaptive Systems Conference, Chicago, IL, 2011.

Ramakanth Gona and Eric D. Smith, *Enterprise Transformation through Aspects and Levels: Zachman Bayesian Approach*, Science Direct, Procedia Computer Science, Elsevier, Complex Adaptive Systems Conference, Chicago, IL, 2011.

Stefan Hempel, Ricardo Pineda and Eric D. Smith, *Self-Reference as a Principal Indicator of Complexity*, International Conference on Systems Engineering, Las Vegas, NV, 2011.

Milad Zarei and Eric D. Smith, *Epidemiology from the Human Perspective, Using Subjectively Perceived Probability of Contagion*, Industrial Engineering Research Conference (IERC), Institute of Industrial Engineers (IIE), Reno, NV, 2011.

Ramakanth Gona and Eric D. Smith, *Healthcare Enterprise Quality Assessment with a Zachman-Bayesian Framework*, Industrial Engineering Research Conference (IERC), Institute of Industrial Engineers (IIE), Reno, NV, 2011.

Bharath Dantu and Eric D. Smith, *Diagnostic Modelling for Medical Decision Making*, Industrial Engineering Research Conference (IERC), Institute of Industrial Engineers (IIE), Reno, NV, 2011.

Eric D. Smith, *Self-Reference: Fundamental Challenges for Autonomous Vehicle Field of Action Maps*, Live Virtual Constructive (LVC) Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2011.

Ricardo Pineda and Eric D. Smith, *Organizational Interfaces between Engineering Complex Systems of Systems*, Live Virtual Constructive (LVC) Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2011.

Ramakanth Gona and Eric D. Smith, *Zachman Framework Consolidation of Quality Measures Across the Testing & Evaluation Enterprise*, Live Virtual Constructive (LVC) Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2011.

William Siefert and Eric D. Smith, *Cognitive Biases In Engineering Decision Making*, IEEE Aerospace Conference, AIAA Technical Co-Sponsor, Big Sky, MT, 2011.

Bharath Dantu and Eric D. Smith, *System Dynamics / Zachman Framework Characterization of Unmanned Aerial Vehicle (UAV) Test & Evaluation (T&E)*, Live Virtual Constructive (LVC) Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2011.

Manish Khadtare and Eric D. Smith, *Fractal Dimensionality Considerations for Use with the Constructive Systems Engineering Cost Model (COSYSMO)*, Live Virtual Constructive (LVC) Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2011.

Hugo Almaraz, Ricardo Pineda and Eric D. Smith, *Complementary Decompositions for Systems within Systems*, Live Virtual Constructive (LVC) Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2011.

Eric D. Smith, Ricardo Valerdi, Karla Aldous and Ricardo Pineda, *Cost Estimation Errors due to Human Biases in the Application of COSYSMO*, Live Virtual Constructive (LVC) Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2011.

Eric D. Smith, *Teoremas de Gödel Sobre Condiciones de Ser Incompleto y Consistente Elucidados con Principios de Niveles de Abstracción, Complementariedad, y Auto-Referencia*, Encuentro Iberoamericano de Investigación Operativa y Ciencias Administrativas, Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM), Monterrey, México, 2010.

Eric D. Smith, William Siefert and David Drain, *Risk Matrix Input Data Biases*, 20th Anniversary International INCOSE Symposium, International Council on Systems Engineering (INCOSE), Chicago, IL, 2010.

Sridhar Pusa and Eric D. Smith, *Consumer Sentiment Index for Economic Time Series Data*, Industrial Engineering Research Conference (IERC), Institute of Industrial Engineers (IIE), Cancun, Mexico, 2010.

Milad Zarei and Eric D. Smith, *Observer-Dependent Model for Analyzing Subjective Parameters in Epidemiology*, Industrial Engineering Research Conference (IERC), Institute of Industrial Engineers (IIE), Cancun, Mexico, 2010.

Eric D. Smith and Ricardo Pineda, *Clarity, Variety, Allocation, Synergy and Emergence in the Formulation of Tradeoff Studies*, Conference on Systems Engineering Research (CSER), Stevens Institute of Technology and the University of Southern California, Hoboken, NJ, 2010.

Eric D. Smith, Ricardo L. Pineda, Karla Aldous and Ricardo Valerdi, *COSYSMO and COSYSMO-R Parameter Estimation Biases*, Conference on Systems Engineering Research (CSER), Stevens Institute of Technology and the University of Southern California, Hoboken, NJ, 2010.

Eric D. Smith, Ricardo Pineda and Justin Kieser, *Architectural Framework & Modeling Innovations for Attribute Based Testing & Evaluation*, Live Virtual Constructive (LVC) Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2010.

Eric D. Smith, David Delgado and Manish Khadtare, *Latency Modeling for Testing and Evaluation*, Live Virtual Constructive (LVC) Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2010.

Eric D. Smith and Omar Sigala, *Software Development with Multiple Reverse Engineering Techniques: A Case Study*, Live Virtual Constructive (LVC) Conference, International Test & Evaluation Association (ITEA), El Paso, 2010.

Francisco Tamayo-Enriquez, Alberto Hernandez Luna, Eric D. Smith and Ramakanth Gona, *Catharsis Time Mathematical Models*, Live Virtual Constructive (LVC) Conference, International Test & Evaluation Association (ITEA), El Paso, 2010.

Eric D. Smith, *Complementarity in Systems Engineering*, Conference on Systems Engineering Research (CSER), Stevens Institute of Technology and the University of Southern California, Los Angeles, CA, 2010.

Eric D. Smith and Neale R. Smith, *Quantum Mechanical Principles of Emergence*, Artificial Neural Networks in Engineering (ANNIE) Conference, University of Missouri – Rolla, St. Louis, MO, 2007.

Eric D. Smith and Terry Bahill, *Attribute Substitution in Systems Engineering*, Industrial Engineering Research Conference (IERC), Institute of Industrial Engineers (IIE), Nashville, TN, 2007.

Eric D. Smith and Terry Bahill, *Risk Analysis*, International Symposium, International Council on Systems Engineering (INCOSE), San Diego, CA, 2007.

Vivek K. Jikar, Elizabeth A. Cudney, Eric D. Smith, Kenneth M. Ragsdell and Kioumars Paryani, *Quantitatively Augmented QFD-HOQ*, Asia Pacific Automotive Engineering Conference, Society of Automotive Engineers (SAE), Hollywood, CA, 2007.

Eric D. Smith and Terry Bahill, *Tradeoff Studies and Cognitive Biases*, International Symposium, International Council on Systems Engineering (INCOSE), Orlando, FL, 2006.

Terry Bahill, Ferenc Szidarovszky, Rick Botta and Eric D. Smith, *What Are Levels?*, International Symposium, International Council on Systems Engineering (INCOSE), Rochester, NY, 2005.

Abstracts & Presentations

Bitcoin Mining with Renewable Energy and Flared Methane (CH4) has a Potential Solution for Global Climate Change, Eric Smith, Iqtiar Siddique, Vladik Kreinovich, IISE Conference 2024

Global Survey on Affects and Effects Caused by the Emergence of Autonomous Organizations: Bitcoin Adoption, Iqtiar Siddique, Vladik Kreinovich, Richard Posthuma, Eric Smith, NMSU-UTEP Workshop on Mathematics, Computer Science, and Computational Sciences, 2024

Autonomous Systems Complexity Assessment, Socorro Systems Summit – Collaborative Exchange, INCOSE Enchantment Chapter, Socorro, NM, 2019

Anti-Logic: Escaping the Illusion of Truth through Uncertain Premises, Christopher Bevins, Juan Ferret, Eric Smith, Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences, April 2024

Global Survey on Affects and Effects Caused by the Emergence of Autonomous Organizations: Bitcoin Adoption, Iqtiar Siddique, Vladik Kreinovich, Richard Posthuma, Eric Smith, Joint NMSU/UTEP Workshop on Mathematics, Computer Science, and Computational Sciences, April 2024

Supporting Student Success at Minority Serving Community Colleges, Department of Education, Washington D.C., 2015

Lidia Zamarron, *Formal Methods for Systems Engineering Requirements to Debug Specifications Sets*, Graduate Research Expo, UTEP, 2013

Aditya Akundi, , Graduate Research Expo, UTEP, 2013.

Luis Hernandez, Mario Salomon, Eric Smith, "Student busing system" in COURI Symposium, Summer 2013

Aditya Akundi, Sergio Luna and Eric D. Smith, *Evaluation of University Transit Systems Using a Systems Engineering Approach*, International Symposium of INCOSE, Philadelphia, PA, 2013

Juan Pablo Fernandez, Pedro Diaz, Aditya Akundi, Mario Salomon and Eric D. Smith, *UTEP B-Cycle System: Campus Bicycle Sharing*, International Symposium of INCOSE, Philadelphia, PA, 2013

Aditya Akundi and Eric Smith, Collective Cognitive Epidemiology: Introducing Subjective Parameters into Disease Spread Models, 2013, DOI: 10.7287/peerj.preprints.49

Juan Carlos Armenta, Mario Salomon and Eric D. Smith, *Miner Re-Cycling System*, International Symposium of INCOSE, Philadelphia, PA, 2013

Bill Tseng, Eric D. Smith, and Paras Mandal, *Green Energy Manufacturing (GEM) Technology and Teaching Innovations at the University of Texas at El Paso (UTEP)*, Department of Education, Higher Education Programs (HEP) Project Director's Meeting, Washington, D.C. 2013.

Eric D. Smith, Oscar Salcedo, Bill Tseng and Paras Mandal, *Flipped Classes from the Manufacturing and Systems Engineering Perspective*, Department of Education, Alliance of Hispanic Serving Institutions (HSI) Educators (AHSIE), 5th Annual HSI/Title V Best Practice Conference, New Jersey City University, NJ, 2013

Oscar Salcedo and Eric D. Smith, *New Flipped Classes in the Systems Engineering Program: Preliminary Findings*, International Sun Conference on Teaching and Learning, Center for Effective Teaching and Learning (CETaL), UTEP, El Paso, TX, 2013.

Caitlin A. Lambing, Department of Architecture, Texas A&M University, Eric D. Smith, Department of Industrial Engineering, The University of Texas at El Paso, *Systems Engineering*, COURI (Campus Office of Undergraduate Research Initiatives) Symposium, 2012

Stefan Hempel, Ricardo Pineda and Eric D. Smith, *Reduced Complexity by a Novel Zachman Framework Complexity Matrix with Causal Loop Diagrams*,

International Symposium, International Council on Systems Engineering (INCOSE), Denver, CO, 2011.

Samantha Dominguez, Ricardo Pineda and Eric D. Smith, *Embedding Ethics into the Systems Engineering Process*, International Symposium, International Council on Systems Engineering (INCOSE), Denver, CO, 2011

Manish Khadtare and Eric D. Smith, *Estimating Student Person Months with Fractal COSYSMO*, Sun Conference on Teaching and Learning, El Paso, TX 2011.

Bharath Dantu and Eric D. Smith, *Visualizing Pedagogical Influences and Interactions throughout a Relevant Ontology*, Sun Conference on Teaching and Learning, El Paso, TX 2011

Ramakanth Gona and Eric D. Smith, *Holistic Quality Assessment of Healthcare Enterprises with a Zachman-Bayesian Framework*, Society for Health Systems Conference, Orlando, FL, 2011.

Bharath Dantu and Eric D. Smith, *Clinical Diagnosis Modeling Techniques with a Systems Dynamics Focus*, Society for Health Systems Conference, Orlando, FL, 2011

Orlando Rivera and Eric D. Smith, *Manufacturing Line Interruption Reduction through Lean and Total Quality Management*, Industrial Engineering Research Conference (IERC), Institute of Industrial Engineers (IIE), Reno, NV, 2011

Bharath Dantu and Eric D. Smith, *Mishap Analysis of Unmanned Aerial Vehicle (UAV) and Black Hawk Friendly Fire Incidents*, Office of Naval Research (ONR) Partnership Conference, Crystal City, VA, 2010

Ramakanth Gona, Francisco Tamayo Enriquez and Eric D. Smith, *Catharsis Time: Towards Complex Engineered Systems Improvement*, Industrial Engineering Research Conference (IERC), Cancun, Mexico, 2010.

Bharath Dantu and Eric D. Smith, *Expansion of an Electronic Health Record (HER) Adoption Simulation Model*, Industrial Engineering Research Conference (IERC), Cancun, Mexico, 2010.

Bharath Dantu and Eric D. Smith, *System Dynamics: Mapping Interactions in the Classroom*, Sun Conference on Teaching & Learning, El Paso, TX, 2010

Ramakanth Gona and Eric D. Smith, *Zachman Framework Populated with Teaching Models*, Sun Conference on Teaching & Learning, El Paso, TX, 2010.

Fernando Castellanos and Eric D. Smith, *Ballistics Testing & Evaluation*, Live Virtual Constructive (LVC) Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2010.

Karla Rovirosa and Eric D. Smith, *Error Budget Modeling for Test & Evaluation*, Live Virtual Constructive (LVC) Conference, International Test & Evaluation Association (ITEA), El Paso, TX, 2010.

Milad Zarei and Eric D. Smith, *Observer-Dependent Lotka-Volterra Model of Epidemiology*, Grand Challenges in Engineering Workshop, El Paso, TX, 2010.

Eric D. Smith, *Tradeoff Study Biases*, Enchantment Chapter of INCOSE Seminar, Albuquerque, NM, 2009.

Eric D. Smith, *Risk Matrix Input Data Biases*, Industrial Engineering Seminar, UTEP, El Paso, TX, 2009

Eric D. Smith, *Attribute Based Modeling & Architecting*, Executive Presentation, Lockheed Martin Corporation, Fort Worth, TX, 2009.

Eric D. Smith, *Risk Matrix Input Data Biases*, Systems Engineering Seminar Series, University of Missouri – Rolla, and Midwest Gateway Chapter of INCOSE, St. Louis, MO, 2008.

Terry Bahill, James Bohlman, Les Cano and Eric Smith, *15 Years of Student Mistakes in Tradeoff Studies*, Workshop on Computational and Behavioral Decision Making, Tucson, AZ, 2008.

Eric D. Smith, *Java Web Based Tradeoff Study Tool*, Annual Meeting, Institute for Operations Research and Management Sciences (INFORMS), Denver, 2004.

RESEARCH

Funded Research

AFOSR, USAFA, DFBL, WERC: Warfighter Effectiveness Research Center, *Risk versus Trust Analysis in Human Machine Teaming (HMT) with the Ghost Robotics Vision-60 Q-UGV,* Air Force Summer Faculty Research Program, $30,000, 2023

UACH-UTEP, Research Sandpit, Clean Energy Challenge, Energéticos Paso del Norte, *Renewable Power to Gas to Power (RPGP) for El Paso Electric,* Alejandra Castellanos, Cornelio Alvarez-Herrera, Javier Tovar-Facio, Eric Smith, Hugo Gutiérrez-Jurado, Oscar Mondragon, Jaime Adame-Gallegos, $15,000, 2023

NAVAIR, *Capability and Capacity Assessment of Manufacturing Division,* Navy Summer Faculty Research Program, 2021

NAVAIR, *Architecture and Flow of Manufacturing Division,* Navy Summer Faculty Research Program, 2020

U.S. Army Combat Capabilities Development Command (CCDC) Inaugural HBCU/MI Design Competition, Great Minds in STEM, Drone League competition, Mike McGee PI, Eric D. Smith Co-PI, $10,000, 2019.

FTA: Fault Tree Analyses, Risk Analysis, and RBD: Reliability Block Diagrams of Water Spray System for Recirculation (RECIRC) Fan, Gillespie & Powers, Eric D. Smith PI, $5,000, 2019.

Technology Management & Diminishing Manufacturing Sources (DMS) Analyses III, Lockheed Martin Aeronautics, Eric D. Smith PI, Bill Tseng Co-PI, 2015, $67,000.

Quality Predictive Algorithm, Lockheed Martin Aeronautics, Bill Tseng PI, Eric D. Smith Co-PI, 2015, $160,000.

NASA Johnson Space Center (JSC), Integrated Mission Operations Contract II (IMOC II) (~$125M total value), Orlando Figeroa, Rick Nygren and Dr. Kam Ghaffarian at Stinger Ghaffarian Technologies (SGT) (PI), Eric D. Smith and UTEP (subcontract for services and student internships), ~$300k, 2014-2019

Analysis of Direct Labor Incentives and Conclusions on Attributes of Successful Incentive Programs, Lockheed Martin Aeronautics, Eric D. Smith PI, Bill Tseng Co-PI, 2014, $80,000.

Technology Management & Diminishing Manufacturing Sources (DMS) Analyses II, Lockheed Martin Aeronautics, Eric D. Smith PI, Bill Tseng Co-PI, 2014, $50,000.

Technology Management & Diminishing Manufacturing Sources (DMS) Analyses, Lockheed Martin Aeronautics, Bill Tseng PI, Eric D. Smith Co-PI, 2014, $50,537.

Integrated Systems Health Management (ISHM) Framework and Data Set for Introductory Course, Lockheed Martin Aeronautics, Bill Tseng PI, Eric D. Smith Co-PI, 2014, $50,000.

Integrated Systems Health Management, Lockheed Martin Aeronautics, Eric D. Smith PI, Ricardo Pineda Co-PI, 2013, $60,000.

B-Cycle Systems for UTEP, Juan Pablo Fernandez, Adytia Akundi, Pedro Diaz, Mario Salomon, Greg McNicol - Associate Vice President of Business Affairs, Dr. Gary Edens - Vice President for Student Affairs, Dr. Eric D. Smith - Assistant Professor, Institute for Manufacturing and Systems Engineering (IMSE), Jeni Clark MBA - Associate Director of CREIE, Robin Grambling MBA - COBA Marketing Advisor, Michael Medina - Metropolitan Planning Organization, Marty Howell - City of El Paso Sustainability Manager, Green Fund of the SGA, 2013, $33,600. This project succeeded in securing a $350,000 investment in UTEP, and increasing the investment in UTEP to $500,000, as part of the total investment by the El Paso Metropolitan Planning Organization of $2,000,000.

Miner Recycling System, Green Fund of the Student Government Association of UTEP, Juan Carlos Armenta, Pedro Diaz, Mario Salomon and Eric D. Smith, 2013, $15,028; $59,828 spent by Union and BUSN building managers; extended by UTEP to $580,000 in Spring 2015.
http://www.utepprospector.com/news/miner-recycling-system-promotes-a-greener-campus-1.3028809#.UW2rRqJg9wk

Student Busing Pilot Study, Green Fund of the Student Government Association of UTEP, Eric D. Smith, Faculty Advisor, Jorge Regalado, Sergio Luna-Fong, Aditya Akunki and Carlos Sanchez, Research Assistants, 2012-2013, $36,781.
http://www.utepprospector.com/news/commuting-alternative-by-the-student-busing-system-project-1.3015282#.UW2yqaJg9wk

Fusing Green Energy into Manufacturing Engineering Education to Cultivate Technical Success and Leadership Excellence among Hispanic Engineering Students, DHSIP, Department of Education, Bill Tseng (PI), Paras Mandal, Eric D. Smith, 2012-2017; $2,500,000.

Rhapsody DoD Frameworks: Methodology for Constructing DoDAF Architectures in IBM Rational Rhapsody Using the UPDM, Lockheed Martin Aeronautics, Eric D. Smith (PI) and Ricardo Pineda, 2012, $197,065.

Technology Refreshment Assessment Model III, Lockheed Martin Aeronautics, Ricardo Pineda and Eric D. Smith (Co-PI), 2012, $95,000.

Wide-Area Student Busing Seed Project, Green Fund of the Student Government Association of UTEP, Eric D. Smith, Faculty Advisor, Carlos Sanchez, Sergio Luna-Forg and Aditya Akunki, Research Assistants, 2012, $33,600.

Judgment and Decision Making Interdisciplinary Research Group: Proposal for Level 1 Funding from the Interdisciplinary Research (IDR) Enhancement Program, Lawrence Cohn, Carline Arrunda, Ashley Bangert, Martine Ceberio, Behzad Djafari, Luciana Garbayo, Christopher Kiekintveld, Vladik Kreinovich, Maria Mariani, Osvaldo Morera, Ana Schwartz, John Symons, and Eric Smith, Fall 2011-2012, $5,000.

Student Support to Enhance Graduate Programs in Systems and Software Engineering, National Science Foundation (NSF), Steve Roach PI, Shamnaz Virani Co-PI, $700,000, 2010-2013. Eric D. Smith added as Co-PI in 2011.

Electric Vehicle Charging Station Architecture Additions for the UTEP Energy Infrastructure Deployment Plan, Emerging Clean Energy Technologies for the Alternative Fuels Initiative Grant Program of the Texas Comptroller Of Public Accounts, State Energy Conservation Office (SECO), Jorge Villalobos, PI, Eric D. Smith, Co-PI, 2011, $98,000.

Energy Dashboard System, sponsored by the UTEP Green Fund, Research Institute for Manufacturing & Engineering Systems (RIMES), Center for Environmental Resource Management (CERM), Ricardo Pineda, PI, Eric D. Smith, Advisor, 2011, $32,000.

Zachman Enterprise Architecture Bayesian Network for the Weighed Combination of Expert Analysis & Judgment Models for Complex and Uncertain Scenarios**,** University Research Institute (URI) Grant Application, UTEP, Eric D. Smith (PI), 2010-2011, $5,000,

Models Describing Joint Behavior of Electric Power Markets and Systems, NSF & DOE FaST (Faculty and Student Team) Summer Fellowship at Pacific Northwest National Laboratory, Electrical Power Systems Integration Group, Power System Econophysics, The GridWise Program, Eric Smith (PI), Aaron Martinez, Federico Esquivel and Matthew Hernandez, Richland, WA., 2010, $28,000.

Modeling & Architecture Project and Faculty Summer Internship, with Ricardo Pineda, Aero Design and Integration, Lockheed Martin Corporation, Fort Worth, TX, 2009, $47,555.

Technology Refreshment Assessment Model II (TRAM2) for Diminishing Manufacturing Sources and Material Shortages, Lockheed Martin Corporation, 2009, $93,600.

Technology Refreshment Assessment Model I (TRAM1) for Diminishing Manufacturing Sources and Material Shortages, Lockheed Martin Corporation, 2008, $18,000.

Proposals Submitted

NASEM: National Academies of Engineering, Science & Medicine, Jefferson Science Fellowship program, Legislative Research for Currency Transitions, U.S. Executive Branch and USAID, $50,000 2023

AAAS: American Association for the Advancement of Science
S&TPF: Science & Technology Policy Fellowship
Crypto-Currency Regulation Development
Faculty Development Leave Program
$100,000, submitted 2023

Global Change Faculty and Administrative Position with research assistant staff, UTEP Research Excellence Program, Office of the Provost &
Office of Research and Sponsored Projects, $250k, 2023

AFOSR, USAFA, DFBL, WERC: Warfighter Effectiveness Research Center, National Defense Power Projection through Bitcoin, Air Force Summer Faculty Research Program, $25,000, submitted 2023

AAAS: American Association for the Advancement of Science
S&TPF: Science & Technology Policy Fellowship
Crypto-Currency Regulation Development
Faculty Development Leave Program
$100,000, submitted 2022

Trans-Disciplinary, Trans-Border Intelligence Hub for Water Sustainability of Drylands (IH-4-H2O), National Science Foundation, PIRE: Partnerships for International Research & Education, Hugo Gutierrez (PI), Eric Smith (Co-PI), Hector Erives (Co-PI), $1,500,000, 2022

SWE: Society of Women Engineers to Support Female SMET Recruitment and Retention with Gamification Videos and a Bi-Cultural Projection Campaign in the Americas, Honda Foundation, Eric D. Smith PI, $55,000, 2021

Nomination, Foundation for Improvement of Justice Award, $10,000, 2019

Shadows to Light (S2L) Systems Research & Development through Personal Transformation, Family Health, & Community Growth to Justify Policy Change, Interdisciplinary Research Leaders Program, Robert Woods Johnson Foundation, Eric D. Smith PI, Jules Simon, Juan Ferret, $350,000, 2019

Shadows to Light (S2L): Model for Diversion and Re-Entry Programs: Research and Policy, Charles Kock Foundation, Eric D. Smith PI, $125,000, 2019

SWE: Society of Women Engineers to Support Female SMET Recruitment and Retention with Gamification Videos and a Bi-Cultural Projection Campaign in the Americas, Engineering Information Foundation, Eric D. Smith PI, $45,000, 2019

Migrant Caravan Fault Tree Analysis, Summer Research Team Program, DHS: Department of Homeland Security, $40,000, 2019

Awakening to a Transformative Scope of Ethical STEM Practice: Institutional Transformation, Cultivating Cultures in Ethical STEM, CCE STEM Program, NSF: National Science Foundation, Eric D. Smith (PI), $600,000, 2018

Mechanical Components Engineering Principles, Lockheed Martin Aeronautics, Eric D. Smith (PI), $55.000, 2016

Innovative Tools and Techniques in Identifying Highway Safety Improvement Projects, Texas Department of Transportation, Carlos M. Chang (PI), Raed E. Aldouri and Eric D. Smith (Co-PIs), 2015, $324,551.

Hispanic Females Pipeline into STEM Careers: Inter-Generational Mentoring Program: Foundation for Sustainable Education Traditions, Minority Science and Engineering Improvement Program (MSEIP), Department of Education, Office of Postsecondary Education, Eric D. Smith, PI, Adeeba Raheem (Co-PI), Cesar Rossatto (Co-PI), 2015, $750,000.

"Development of Design Based on Nano-Porous Polymeric Metallic Super Oxides for Dual Function Carbon Dioxide Adsorbing Material and Oxygen Producing Material, with Secondary Methanol Products," Eric Smith, PI, Alla Eid (Co-PI), Science and Technology Development Fund, USAID, 2015, $400,000.

Nurturing STEM Students' Commitment to Personal Ownership of Quality Work: A Needed Cultural Change, National Science Foundation, Directorate for

Education & Human Resources, Solicitation: 14-588, Improving Undergraduate STEM Education (IUSE: EHR) Engaged Student Learning: Design and Development I, Oscar Mondragon (PI), Eric D. Smith (Co-PI), Subcontractor: How Many Engineers, Inc., Michael Robkin, President, 2015, $600,000.

Technology Management for DMSMS (Diminishing Manufacturing Sources and Material Shortages), Summer Undergraduate Research Mentoring Experience (SURME) Program, COURI, UTEP, 2015.

Systems Engineering Advanced Research Group (SEAR Group), Governance Agreement among University of Texas System (UTS), University of Texas at Arlington, University of Texas at Austin, University of Texas at El Paso, University of Texas at San Antonio (Members), a consortium for participation in the Department of Defense (DoD) national Systems Engineering Research Center - University Affiliated Research Center (SERC-UARC), 2014.

Una Caracterización de Autómatas Finitos Cuánticos, Serie Planes de Investigación Ciencia Básica, CONACyT-SEP, Mexico, Juan C. Acosta Guadarrama (PI), César Bautista Ramos, Nely Plata César, Eric D. Smith (Co-PI), 2014, $50,000.

Pipeline of Hispanic Females into STEM Careers: Inter-Generational Mentoring Program: Foundation for Sustainable Education Traditions, Minority Science and Engineering Improvement Program (MSEIP), Department of Education, Office of Postsecondary Education, Eric D. Smith, PI, Grace Yan (Co-PI), Cesar Rossatto (Co-PI), and Samantha Dominguez (Loretto H.S.), 2013, $750,000.

Teachers' Critical Analysis of Student Data to Improve Learning, Cesar Rossatto PI, Mourat Tchoshanov, Eric D. Smith, Spencer Foundation, 2013, $900,000.

NSF EESE: Ethics Education in Science & Engineering, Teaching Sustainability Ethics through Building a UTEP Satellite "Sustainability" Campus-Community: A Feasibility Study, Jules Simon and Eric D. Smith, 2013, $300,000.

NSF, SBIR Phase I, Electronics, Information and Communication Technologies, Suite of Network-Enabled Portable Integrated Medical Devices (SNEPIMD) Development for Physicians and Promotora Community Health Workers Targeting Diabetes Health Disparities in El Paso Texas, Eric D. Smith (PI, UTEP), Ross Dahman (PI, CONNECTgrids), Homer Nazeran, Filiberto Macias and Daniel Terreros (TTUHSC), 2012, $150,000.

NASA Johnson Space Center (JSC) Engineering and Technology Services (JETS) Contract (~$2.16 Billion total value), Orlando Figeroa, Rick Nygren and Dr. Kam Ghaffarian at Stinger Ghaffarian Technologies (SGT) (PI), Eric D. Smith and UTEP (subcontract for student internships), ~$5million, 2012.

Graphical Book of Horticulture: Environmental and Cultural Techniques for Women, Grand Challenges in Global Health: Labor Saving Innovations for Women Smallholder Farmers, Bill & Melinda Gates Foundation, Eric D. Smith (PI), 2012, $100,000.

Suite of Network-Enabled Portable Integrated Medical Devices (SNEPIMD) Development for Physicians and Promotora Community Health Workers Targeting Diabetes Health Disparities in El Paso Texas, **National Institutes of Health (NIH), Development and Translation of Medical Technologies to Reduce Health Disparities (R43/44), RFA-EB-12-001**, Eric D. Smith (PI, UTEP), Ross Dahman (PI, CONNECTgrids), Homer Nazeran, Filiberto Macias and Daniel Terreros (TTUHSC), 2012, $400,000.

Online Course Development and Deployment for the Systems Engineering Program in the IMSE Department, Provost Office of UTEP, 2012, $76,308

RELATIONAL ETHICS: Using Holon Modeling, Relational Complexity Theory, and Phenomenological Ethics to Innovatively Impact the Pedagogy of Engineering and Science Co-Education, Ethics Education for Science and Engineering (EESE), National Science Foundation (NSF), Eric D. Smith (PI), Jules Simon, Cesar Rossatto and Noe Vargas-Hernandez, 2012, $300,000.

Self-Organizing Inter-Generational Mentoring Program: Foundation for Sustainable Education, Minority Science and Engineering Improvement Program (MSEIP), Department of Education, Office of Postsecondary Education, Eric D. Smith, PI, Cesar Rossatto, Jianmai Zhang, Noe Vargas-Hernandez, 2011, $660,000.

Fusing Green Energy into Manufacturing Engineering Education to Cultivate Technical Success and Leadership Excellence among Hispanic Engineering Students, Minority Science and Engineering Improvement Program (MSEIP), Department of Education, Office of Postsecondary Education, Bill Tseng (PI), Noe Vargas-Hernandez, Eric D. Smith, 2011, $750,000.

B@2DGE2S: Biology Alternative Assessment Development Geared via Ethnoscience, Engineering, and Sustainability, MacArthur Foundation, Cesar A. Rossatto (PI), William J. Median, Eric D. Smith, Noe Vargas-Hernandez and Angela Valenzuela, $200,000, 2011.

ARRA: Critical Pedagogy Best Practice (CPBP): Critical Pedagogy in STEM Education, Investing in Innovation Fund of the Department of Education, Cesar A. Rossatto (PI), William J. Median, Eric D. Smith, Elena Izquierdo, $3,000,000, 2011.

Systems Engineering Decision Making Management Plan for Installation Energy At White Sands Missile Range (WSMR), Environmental Security Technology Certification Program (ESTCP), 2011.

Eric D. Smith PI 68%, Noe Vargas 16% and Shamsnaz Virani 16%, *H9-12 Aeronautics Systems Engineering Program*, Office of Naval Research, Science, Technology, Engineering & Mathematics (STEM) for k-12 & Institutions of Higher Education, 2011, $400,000.

Eric D. Smith PI 100% *Observer-Dependent Model for Analyzing Subjective Parameters in Epidemiology*, Intelligence Community (IC) Post-Doctoral Research Fellowship Program, Central Intelligence Agency (CIA), Directorate of Science and Technology, Office of the Chief Scientist, 2011, $240,000, Submitted.

Eric D. Smith, PI, *Augmented Zachman Enterprise Architectural Bayesian Framework for the Evaluation of Intelligence Community Analyses*, Intelligence Community Postdoctoral Fellowship (2-3 years), Office of the Chief Scientist, Central Intelligence Agency, 2010, $240,000.

Eric D. Smith, PI, *NASA X-TOOLSS (eXploration Toolset for Optimization Of Launch and Space Systems)*, Exploration Systems Mission Directorate (ESMD) Higher Education, National Space Grant College Faculty Fellowship Project, Lunar and Planetary Surface Systems, Marshall Space Flight Center, NASA (National Aeronautics and Space Administration), Huntsville, AL, 2010, $24,000.

Eric D. Smith, PI, *NASA Glenn Faculty Fellowship Program (NGFFP)*, National Aeronautics and Space Administration, Cleveland, OH, 2010, $17,000.

Noe Vargas-Hernandez, Anne McKenna and Eric D. Smith, *Center for Re-Imagining Engineering Education and Scholarship (C-REES), HER-Engineering STEP Center*, National Science Foundation (NSF), 2010.

Timothy Maxwell, Noe Vargas-Hernandez, Atila Ertas, Richard Gale, George Cobb, Phil Nash and Eric D. Smith, *NSF IGERT Proposal*, 2010.

Carlos Chang and Eric D. Smith, *Management Science Applications for TXDOT: Scoping Study*, Texas Department of Transportation, 2010, $100,000.

Eric D. Smith, PI, *Improving Decision Effectiveness in Multi-Level Organizations*, Intelligence Community Postdoctoral Fellowship, National Geospatial Intelligence Agency, 2009, $240,000

Eric D. Smith, PI, *Investigating Postponement in Logistics Through Quantum Mechanical Principles*, University Research Institute, UTEP, 2009, $10,000.

Carlos Chang and Eric D. Smith, *Development of a Performance Measurement Based Methodology to Objectively Compare Operational Improvements with Capacity Additions*, Texas Department of Transportation, 2009, $177,577.

Donald Myers and Eric D. Smith, *U.S.-Mexico Training, Internships, Exchanges, and Scholarships (TIES) Partnership Initiative*, Higher Education for Development, USAID, 2008, $250,000.

Eric D. Smith, PI, *Investigating Emergence through a Quantum Analogy*, University of Missouri Research Board, 2007, $7,500.

Statement of Research Interests

My current research development efforts are in the areas of

- Complex Systems Engineering
- Technology management
- Enterprise transformation
- Decision making, human heuristics & cognitive biases
- Risk and opportunity management

I wish to provide intelligent and beneficial systems integration at the highest level.

I have participated in approximately $4Million of sponsored projects, and successfully delivered results in the areas of:

- Architecture and Modeling of Systems-of-Systems
- Technology Management & Diminishing Manufacturing Sources (DMS)
- Quality Prediction Algorithms
- Analysis of Direct Labor Incentives and Incentive Programs
- Integrated Systems Health Management (ISHM) Framework
- Green Energy Manufacturing
- DoDAF Architecture
- Technology Refreshment Assessment Models
- Judgment and Decision Making
- Zachman Enterprise Architecture Bayesian Networks
- Electric Power Markets and Systems
- Electric Vehicle Charging Stations
- Energy Dashboard System

My research efforts for discovery, innovation and value creation have been in alignment with the College of Engineering's Vision to "Change the Face of Engineering," as the leading institution in the U.S. for Hispanic engineers and for Engineering Education.

I believe in the Core Beliefs of the College of Engineering:

RESEARCH FUELS PREEMINENCE
COLLABORATION CREATES OPPORTUNITIES
DIVERSITY DRIVES INNOVATION
BALANCE SECURES SUSTAINABILITY

As Graduate Program Director, it is currently a large part of my job to provide continuing support to the graduate and undergraduate students in the Systems Engineering Program and in the IMSE Department. As a faculty member seeking internship and clinical experiences for undergraduate students and graduate student Engineers, my job as a public servant is to channel as many industry sponsored projects as possible toward the College of Engineering, and to partner colleagues. Historically, our Systems Engineering graduate program has provided nearly all its students with real and sponsored industry

projects, as well as post-graduation job placement. Often, industry partners, like federal funding agencies such as the NSF and DoEd, want to be involved with the cultivation of students, and it is beneficial to facilitate the transfer of this support to the students with innovative programs and learning experiences.

I have sought support for students, and have helped generate the following internship and scholarship programs:

- NASA Johnson Space Center (JSC) student internships
- Systems and Software Engineering graduate student support (NSF)
- Lockheed Martin Aerospace, internship program

Environmental projects for the campus and community, in which I have participated:

- B-Cycle Systems for UTEP
- Miner Recycling System
- Student Busing Pilot Study

Despite the fact that the Systems Engineering Program, within which I have employed the greater majority of my tenure-track and tenured time, had no thesis option (as a Project Practicum internship and professional development program) and the fact that the IMSE Department currently has no PhD program (other than borrowed use of other department or College of Engineering programs), I have encouraged students to pursue research by guiding individual studies, and by inviting them to participate in the publishing process.

The current challenge is to span the space between fundamental theory and experimentation, to applied research, to product development, and the satisfaction of human needs. I foresee collaborations with industry partners through CREIE (Center for Entrepreneurship and Innovative Enterprises) as well as other research centers on campus, such as RIMES (Research Institute for Manufacturing and Engineering Systems) and CERM (Center for Environmental Resource Management).

My growth in publishing results in peer-reviewed journals and communicating at conferences and in peer-reviewed journals is strong, with 236 total citations, with 188 citations since 2010. My h-index is currently at 9, and my i10-index at 9. I want to achieve greater achievement and expanded recognition for genuine achievements as a researcher.

I am proud of the variety and quality of my publications, and for the insights received and shared with many co-authors. The diversity of topics that I have researched are an indicator that my inquisitiveness remains lively, and that I am determined to make notable contributions in the area of complex systems engineering:

- *Ameliorating mental mistakes in tradeoff studies;*
- *Sensitivity analysis, a powerful system validation technique;*
- *Valid models require defined levels;*

- *Risk matrix input data biases;*
- *Attribute substitution in systems engineering;*
- *Tradeoff studies and cognitive biases;*
- *Functional analysis & architecture;*
- *Cognitive biases affect the acceptance of tradeoff studies;*
- *UML Profile and Extensions for Complex Approval Systems with Complementary Levels of Abstraction;*
- *Enterprise Experimentation and Influence Management through Aspects and Levels:*
- *Zachman-Bayesian Approach; Fractal-COSYSMO Systems Engineering Cost Estimation for Complex Projects;*
- *Self-reference as a principal indicator of complexity;*
- *Medical Process Modeling with a Hybrid System Dynamics Zachman Framework;*
- *Cognitive biases in engineering decision making;*
- *Complementarity in Systems Engineering; Gödel's incompleteness and consistency theorems elucidated with principles of abstraction levels, complementarity, and self-reference.*

I intend to obtain research grants and publish papers in peer-reviewed journals, while maintaining an open and adaptive stance to research and collaboration with colleagues in a multi-disciplinary setting.

My research interests include systems engineering, decision making in parallel, with tradeoffs and with consideration for cognitive biases, and complex and self-organizing systems. My focus is always toward large-scale efficiency increase and optimization.

One of my greatest delights is being employed as an academic professional, a position which involves perpetual learning, discovery and knowledge integration. Few people get to re-invent and refine their thought processes as a profession.

I believe that the best and most enjoyable role of a researcher is to enjoy the fruits of discovery, disseminating emergent insights and the benefits of paradigm shifts to all students and members of the human family.

Sincerely, Eric D. Smith

Research Institute for Manufacturing and Engineering Systems (RIMES) and Intelligent Systems Engineering Laboratory (ISEL) activities

As a Research Associate of RIMES (Research Institute for Manufacturing and Engineering Systems), Eric Smith serves as Principal Investigator or Co-Principal Investigator for projects performed by Graduate Assistants (GA) or Undergraduate

Assistants for industry partners, such as Lockheed Martin Aeronautics. Eric Smith also serves as Director of Systems Engineering Initiatives in the Intelligent Systems Engineering Laboratory (ISEL).

Currently, he serves as Co-Principal Investigator on the $2.5M grant from the Department of Education, "Fusing Green Energy into Manufacturing Engineering Education," with the intent to increase the number of minority and women engineers in the field. Currently, effort is being placed on integrating information, technology-based and real-world problem solving into new Green Energy Manufacturing (GEM) courses. The highly-experiential courses, fused with industry learning and one-on-one learning experiences, will increase the number of well-trained system engineers with the skills to identify opportunities for innovative green energy processes and practices.

Eric Smith is director of the GEM Leadership Workshop, held once per year, featuring industry leaders as speakers, and emphasizing both technical and ethical leadership growth. The operational idea is to boost students' self-contemplated and actual performance in engineering intellectual merit, entrepreneurial performance, and societal contribution.

As Director of Systems Engineering Initiatives at the ISEL lab, Eric Smith has advised student teams participating the in the 2011 & 2012 NASA Texas Space Grant Design Challenge, held in Houston TX at the Houston at Space Center Houston, the Official Visitors Center of NASA's Johnson Space Center, including a graduate team tacking design challenges in the Mars Water Works System, and an undergraduate team addressing the Mars Village and Habitat Module Design.

Eric Smith also serves at Advisor of the International Council on Systems Engineering (INCOSE) Student Division of the Gold Circle winning Enchantment Chapter of INCOSE in Albuquerque NM.

ISEL serves as a backdrop for yearly advising of Senior Design teams, PACE (Partners for the Advancement of Collaborative Engineering Education) Engineering Design Competition teams, and Summer Research Academy (SRA) scholars, and NSF & Department of Energy FaST (Faculty and Student Team) Summer Fellowship program, among other programs.

Eric Smith advises students in the documentation of their research efforts in the form of conference papers, and leads students to the yearly presentation of approximately ten research papers in the conference of the International Council on Systems Engineering (INCOSE), the Complex Adaptive Systems (CAS) conference, the International Test & Evaluation (ITEA) conference on Systems of Systems, and the Industrial & Systems Engineering Research Conference (ISERC) of the Institute of Industrial & Systems Engineers (IISE).

Statement of Teaching Philosophy

> "I have come to believe that a great teacher is a great artist and that there are as few as there are any other great artists. Teaching might even be the greatest of the arts since the medium is the human mind and spirit."
>
> - John Steinbeck

Education is undergoing a paradigm shift in which the wide availability of information has exponentially expanded learning opportunities for students. Consequently, faculty members are now not so much teachers (and certainly not "lecturers"), but rather facilitators for student groups, as well as optimizers and tuners of the study and research networks that will expand from, but continue to gravitate toward, university campuses. The modern day professor is in a daily competition with 'the network' to provide relevant experiences that add value to student university experiences.

All courses should include project-based learning (PBL) and experiential learning, and should be engaging for students. Project-based learning encourages personal leadership growth, teamwork and cooperation skills, as well as requiring that students understand the whole of a project, not just specific deliverables.

In systems engineering courses, the idea is to expand a student's awareness from the product level, to the project, program and enterprise level. The ultimate long-term goal is for students to be effective knowledge workers in the environment created by the big entities that serve the marketplace, namely, industry, academia, and government. Integral to this is providing internship experiences for students, experiences which are invaluable for the integration of students into the workplace.

Teaching in the academic setting is necessarily grounded in bookwork, since there is no substitute for the ability of graduates to know and apply the knowledge of their engineering disciplines and specialty knowledge. However, the engineering graduate should have equally well developed social skills, to be able to carry an idea from conception, to development, to deployment, and to value creation.

> "Education is not the filling of a pail, but the lighting of a fire."
>
> – William Butler Yeats

Good teaching philosophy arises from a focus on Benjamin Bloom's classification of educational objectives and the theory of mastery learning. Mastery learning seeks to create the appropriate learning conditions so that all students can learn effectively. Mastery learning emphasizes assessment and feedback of overt behaviors that can be observed and recorded. My curiosity has driven me to attempt to develop architectural frameworks of educational objectives according to their cognitive complexity and classroom pragmatics.

While it is certainly important to discover what students are thinking in the classroom in order to respond to their learning needs, a teacher cannot impose thought

change on students. By discovering my own thoughts while teaching in the classroom, I can begin to develop strategies to optimize my teaching and mentoring.

Currently, I am investigating methodologies to answer Bloom's Two Sigma Problem: the challenge of creating the effectiveness of personal tutoring and mentoring within the classroom, via combinations of multiple interactive and group teaching techniques.

I believe that Mastery Learning ultimately leads to Mihaly Csikszentmihalyi's emphasis on the phenomenon of flow, which occurs when there is a matching of skill level with challenge level of an activity. A high challenge level requires the full engagement of the student, and a good matching of the challenge to the student's capabilities allows the student to employ their skills, with the result being a full engagement in the activity in such a way that the perception of time recedes into the background, and a person experiences vibrant learning.

My teaching plan is to apply the elements discovered by Bloom and Csikszentmihalyi, as well as systematic efforts that are both disciplined and creative, so as to help create the environments and results envisioned.

Teaching Experiences

In meeting the educational challenges of university teaching, I have learned greatly about diversity, access to excellence, enrollment and graduation, and greater collaborations. My current teaching environment has taught me to:

1. Teach all undergraduates, and not just the "stars"
2. Teach all graduate students, and not just the "stars"
3. Engage and mentor all students (at all levels) authentically in research
4. Engage in collaborative research
5. Develop and implement practical and effective action plans
6. Act more like a visionary coach than a boss
7. Be the sort of superstar who enables others to grow and shine
8. Connect the university with the regional, national and international communities
9. Lead with broad meaningful engagement, and include more people from under-represented groups

Flipped Classroom with Improvements

Flipped Teaching does away with lecturing with a form of blended learning which employs technology to leverage learning in a classroom, particularly with the use of pre-recorded videos of topics covered every semester, so that I can spend more time interacting with students. In response to today's shifting educational paradigm, I have implemented the Flipped Classroom paradigm in all of my courses, thus shifting control and responsibility to an increasing networked student body, while serving as a facilitator and evaluator in the educational community. Students must be free to partially guide classes toward addressing current societal needs, while learning the responsibility to thoroughly cover a course's materials, and also learning to incorporate and employ the knowledge gained toward their aspired goals.

Cycles to Mastery http://www.innovationengineering.org/cycles-to-masterytrade.html
The Cycles to Mastery program emphasizes a Lean approach to learning and teaching, principally involving short cycle-time hands-on experiences and feedback to learners, in order to continually readjust and increase knowledge transfer to students.

Recently, my involvement with Dr. Eksir and his Mission Success and Talent Development Initiative at Lockheed Martin, and his global perspective of supply chains and customer value chains, has opened my eyes as to the extent of the educational supply chain and the extent to which it creates value throughout society.

Teaching Initiatives in the M.S. S.E. Program that I am currently pursuing:
1, Systems Engineering (SE) Program
- a, Flipped Classroom Systems Engineering course development
- b, Online and Hybrid Systems Engineering program
- c, Research and M.S. Thesis augmentation of SE program
- d, Ph.D. program addition to IMSE Dept.

Teaching initiatives within the Systems Engineering Program and the IMSE Department have been directed toward increasingly networking with industries of practice in order to draw in industry knowledge and at the same time plug-in students to their personally discovered career paths and areas of contribution.

"The one exclusive sign of thorough knowledge is the power of teaching."
- Aristotle

My Teaching Goals include:
1) Teach students the latest technical knowledge, based on current research,
2) Prepare students to enter the working professional world,
3) Advise graduate students seeking higher degrees and academic positions, and,
4) Foster a collegial environment that nurtures independent research, contribution, and lifetime achievement.

Dr. Terry Bahill, my dissertation advisor, was an especially welcoming and instructive guide into the academic life, and its multi-faceted nature. He guided me in the preparation of lectures at the University of Arizona, and nationally. He showed me how to disseminate research findings in the form of peer-reviewed publications.

My brother, Dr. Neale Smith, is an Associate Professor of Industrial Engineering at the Monterrey Institute of Technology, in Monterrey, Nuevo Leon, Mexico. I was raised in an Anglo-Hispanic culture. My father is Anglo and my mother is Hispanic. I have spent time in both Mexico and the USA and have dual citizenship. My father was a business owner of a communication radio manufacturing plant in Mexico. My parents have given me a strong foundation in the value of knowledge and education.

As such I feel that I could make a significant contribution to graduate and undergraduate education by working actively to encourage ethnically diverse and

Hispanic students to study engineering. In addition, I could recruit outstanding graduate students through my academic contacts in Mexico.

Recently, I applied for funding to the Department of Education Minority Science and Engineering Improvement Program (MSEIP) for a program that embodies some of the most honorable movements in education equality today:

Pipeline of Hispanic Women into STEM Careers: *Inter-Generational Mentoring Program: Foundation for Sustainable Education Traditions*

A Pipeline of Hispanic Women into STEM Careers will be created when the University of Texas at El Paso (UTEP) establishes and nurtures after-school STEM support programs at local feeder high schools, including the all-girls Loretto High School, and Eastwood H.S., all of which have an approximately 80% Hispanic population.

Inter-Generational Mentoring will provide that the supported high school students are in direct contact with university students pursuing STEM degrees, who will serve as activity facilitators while pursuing their own educations as Research Assistants (RAs).

Service Learning activities, provided by industry-focused programs and faculty members in Industrial, Manufacturing & Systems Engineering, Civil Engineering, and Teacher Education / Teaching, Learning and Culture programs, will further augment intergenerational contact for the high school students, by putting them in contact with accomplished industry leaders, as well as project customers who are looking to satisfy real world needs of the El Paso business community.

The educational challenges of minority and female engineering and science students must be addressed directly, with an organic system that meets the objective and subjective needs of students, with an adaptable, self-grown focus. The proposed approach, Inter-Generational Mentoring (IGM), has a robust implementation strategy with numerous benefits and a high potential for sustainability. This IGM program has strong foundational support from tested theories of Critical Pedagogy and Paulo Freire's studies of optimism as an emergent, fruitful result of adept educational methods which validate student aspirations.

My background includes years of substitute teaching at the pre-school, elementary, middle school and high school levels – in classroom environments ranging from arts to sciences, gifted to developmentally disabled, delightful to unruly. This has given me a strong preparation in two areas:

1. Human cognition and educational retention, and,
2. Methods for gaining attention and increasing the retention of information.

Also, I have experience in the rapidly-developing field of online education as an Instructional Associate for the National Technological University, and as a Lecturer in the Department of Engineering Management and Systems Engineering at the Missouri University of Science & Technology.

I wish to apply what I know, and continue learning.

I have been blessed to have entered the environment of UTEP, with the institutional vision and the administration and faculty oriented toward creating the First National

Research University with a 21st Century Demographic. The College of Engineering vision to Change the Face of Engineering has likewise been a transformative experience personally. The identified institutional goals truly involve the benefits of diversity of peoples and cultures, interdependencies between teaching, research, and service, as well as between industry, academia and government.

Involvement in RIMES, the Research Institute for Manufacturing and Engineering Systems, has greatly increased my exposure to industry projects, through research projects, faculty fellowships, and student internship support. Exposure to real customer needs has cemented my awareness that engineering efforts must be entrained with customer concerns and solutions. RIMES was instrumental in facilitating the award of many contracts that led to the support of graduate student research assistants, who are necessary for the support of the growth of in-house knowledge that is then marketable to further industry partners.

I believe that teaching is more than facilitating learning. Teaching is not only about motivating students with interesting class preparations, but also about mentoring students as they progress through the growth of their own sets of ideas. Today, such growth occurs not only in the classroom but also in the clinical or internship setting. Most importantly, student creativity should be fostered and nurtured, sometimes with logical investigations, and at other times with Socratic inquiry and more open-ended discussions.

The teacher's role is not only to impart one's own hard-won knowledge as quickly and as generously as possible, but to nurture an environment where students achieve their full potential, and ultimately surprise the teacher and all their peers with their unexpected, emergent solutions to society's grand challenges.

Enthusiastically,
Eric D. Smith

Theses and Dissertations supervised

Note: the UTEP IMSE Systems Engineering Program, within which Eric D. Smith employed the greater majority of his tenure-track and tenured time, had no thesis option, but is a Project Practicum internship and professional development program.

In addition, the UTEP IMSE Department currently has no PhD program, other than borrowed use of other department or College of Engineering programs.

For these reasons, involvement in thesis and dissertation production was moderated.

Ph.D. DISSERTATION ADVISOR

Present
Yasser Davizon, Electrical & Computer Engineering (ECE)

2021
Krishnan Iyer, Advanced circular systems engineering framework for sustainable circular electronic industry, Environmental Science & Engineering (ESE)

2019
Griselda Acosta, Mathematical Modeling, Co-Advised with Dr. Kreinovich

2017
Angelo Karavolos Ph.D., System for Absorption of CO2 and Production of O2, Material Science and Engineering Program

2016
Aditya Akundi Ph.D., ECE-ISE Dissertation track, Information Entropy Measures Applied to Hierarchical Complex Technical and Socio-Technical Systems

Advised
Maria Perez, ESE, Biases in Socio-Technical Systems
Diego Cruz-Cano, ECE-ISE Dissertation track, Smart Grid Innovations
Raul Ruiz, ECE-ISE Dissertation track, Systems Engineering Research
Alberto Cuvelier, ECE-ISE Dissertation track, Systems Engineering Research
Beverly Rivera, ECE-ISE Dissertation track, Cyber Security
Deyaaldeen Abusal, Environmental Science & Engineering (ESE)

M.S. THESIS GRADUATE ADVISOR

2024
Marco A. Rosa, Captain, Ret., Effective Integration of Diverse Engineering Competencies in the Development of Complex STEM (Science, Technology, Engineering, or Mathematics) Projects: Optimizing Efforts and Investments in Student-Led Research Projects, M.S. SE, Eric Smith, Annalisa Perez, Sergio Luna Fong, Bill Tseng, and Dean Kenith Meissner

2023
Iqtiar M. Siddique, Decentralized Networks and Distributed Ledger Technologies

2022
Jason Farley, Organizational Project Management

2019

Ibrahim Naji, Autonomous Aerial Vehicles, 2019

Ngozi Ochoa, Agile MBSE: Model-Based Systems Engineering

2018

Deyaaldeen Abusal, M.S. Industrial Engineering, Technical Project Management: Union of Systems Engineering Processes with Project Management Processes

2016

Jagadish Thimiri, M.S. Systems Engineering, Economics Analysis of Controlled Substances Interdiction

2011

Bharath Dantu, M.S. Industrial Engineering, Improvement of Complex System Decision Making Using System Dynamics and Zachman Framework Techniques, Dec. 2011

Ramakanth Gona, M.S. Industrial Engineering, Enterprise Transformation through a Zachman-Bayesian Framework to Improve Efficiency & Productivity, Oct. 2011

Manish Khadtare, M.S. Electrical Engineering, Fractal-COSYSMO Systems Engineering Cost Estimation of Complex Projects, Aug. 2011

2010

Milad Zarei, M.S. Industrial Engineering, Observer-Dependent Model for Analyzing Subjective Parameters in Epidemiology, Nov. 2010

2008

William T. Siefert, M.S. Systems Engineering, Cognitive Biases in Risk Management, Missouri S&T, 2008

Ph.D. CANDIDATE COMMITTEE MEMBER

Present

Maria Perez, Engineering Education, Justice Walker chair

Elliott Gurrola, ECE, Michael McGarry, chair

2024

Mansura Nusrat, Three Essays on Workplace Ethics And Ai: Conceptualizing, Scale Development, And Validation Of Self-Moral Actualization, And Ai-Enabled High-Performance Work Systems; Richard Posthuma, chair

2023

Adeel Malik, Dynamic Vulnerability Classification for Enhanced Cyber Situational Awareness, Deepak Tosh chair

2022

Laxman Bokati, Decision Making, Computational Science, Dr. Vladik Kreinovich chair

2021

Christopher Mendoza, Network Link Outlier Factor (NLOF) for Localizing Network Faults, ECE Dept., Michael McGarry, Chair

Johanes Makahaube, Civil Engineering Management, PhD CE candidate, UTEP, Dr. Carlos Chang advisor

2020

Yang Zhang, Management, Richard Posthuma chair

Franziska Renz, Management, Richard Posthuma chair

2017

Hebin, Luan, Efficient Design For The Next Generation Air Defense Simulation System Using Object-Oriented And Visualization Approaches, Bill Tseng, ECE-ISE

Rangel, Pablo, Small Unmanned Aerial Vehicle (UAV) Sense and Avoid (SAA) Airway Coordination Modeling Based on the Emulation of Gas Particles Elastic Collisions Behavior, ECE, Virgilio Gonzalez chair

2016

Juan Saavedra, Optimal Quality Control Strategy in Green Energy Manufacturing, Dr. Bill Tseng chair

2015

Rafael Arturo Ramirez Flores, Confidence in Selection of Candidate Sections for Treatment in Pavement Management Systems, PhD CE candidate, UTEP, Dr. Carlos Chang advisor

2013

Mazin M. Al-Zou'bi, Pavement Management Information System (PMIS), Dr. Carlos Chang advisor, PhD CE, UTEP, Dr. Carlos Chang chair

M.S. GRADUATE COMMITTEE MEMBER

Present

2024

Alex Michael Martin, A Comprehensive Study of Cyber Security Attacks, Threats, And Risk Mitigation, And How to Reduce Impact on Small And Medium Enterprise by Creating And Using an Incident Response Plan, SE, Dr. Luna chair

William Venable Newcomb, Fatigue Endurance of Alsi10mg Post Hip Heat Treatment with High Duration Thermal Aging, ENG, Dr. Medina chair

2023

Carlos Alcantara, Evaluating Flow Features for Network Application Classification, ECE, Michael McGarry chair

2022

Beatriz Irene Soto, Interoperability in Electrified Transportation Systems: A Model-Based Systems Engineering Perspective, Sergio Luna, Chair, IMSE

Abdulaziz Alidrees, Forecasting Consumer Consumption Behavior Of Water Bottles Using Generalized Linear Model For Supply Chain Resilience, IE, Jose Espiritu chair

Lyan Gutierrez, Effect of Temperature on a Piezoelectric Mass Flow Rate Sensor Signal, MECH, Dr. Love chair

2021

Brett Babcock, Adaptive Lean Manufacturing Implementation for Organizations with Rapid Leadership Turnover, IMSE Dr. Jose Espiritu chair

2019

Shantanu Rojatkar, Sustainability: a Phenomenological Approach, Philosophy Dept., Dr. Jules Simon chair

Swapnil Chauhan, Code Smells Quantification: A Case Study on Large Open Source Research Code, CS Dept.

2018

Christopher Mendoza, Detecting Contaminated Fiber Connectors, ECE Dept., Michael McGarry, Chair

Francisco Martinez, Crawler Inspection Robot with Machine Vision (Lifelong Endevour), IMSE Dept., Bill Tseng, Chair

Julio Reyes, Computation Offloading Decision Analysis: The Impact of Data Marshalling, Dept. of Electrical and Computer Engineering, Michael McGarry, Chair

Armando Ramirez, Optimization For The Allocation Of Funds For Pavement Maintenance In Pavement Management Systems, Civil Engineering, Carlos Chang, Chair

Olayinka Obafemi, Microgrids of Sustainable Energy as Islands and Connected to the Grid, IMSE Dept., Bill Tseng, Chair

2017

Ashiqur Rahman, A CubeSat Communication System Development For GTO Mission, Ahsan R. Choudhuri, Chair

Anand Raj, Supplier Evaluation And Selection In Automobile Industry, Bill Tseng, Chair

Leonardo Orea Amador. Empathic Experience Design For Cognitive Impairment, Meagan Kendall, Chair

2016

David G. Guzman, Touch And Step Potential Analysis At 23.9kv To 4.16kv & 13.8kv To 4.16kv Distribution Substations With Pad-Mounted Transformers, Floating Grounds, And Other Exposed Ungrounded Metal Bodies Using Winigs, Miguel Velez-Reyes, Chair

Israel Michel, Design Structure Method as Applied to the Structural Organization of a 5th Generation Fighter Jet, Tzu-Liang Tseng, chair

Cristian Giovanni Lopez Ulloa, Part Detection and Classification Using Integrated Machine Vision and Knowledge Based Expert System, Bill Tseng, chair

Arzhang Ghassemi Pashakalaei, Optimization Of Power Distribution In A Net-Zero Building, Bill Tseng chair

2015

Armando Ramirez, Funding Allocation Optimization Approach for Pavement Maintenance and Rehabilitation, Carlos M. Chang chair

Oscar Alejandro Murga Torres, Three Dimensional Structural Electronics: Pick and Place, Bill Tseng chair

Victor Manuel Loya Garnica, A Cell Formation Algorithm for Sequential Processes with Alternative Machine Selection in the Automotive Lighting Industry, Bill Tseng chair

2014

Gabriela Ituarte-Villareal, Optimization of Location and Transportation Problem for Green Logistics, IMSE Department, Tzu-Liang (Bill) Tseng chair

Jose Lafon, Foreign Object Debris Economic Analysis, IMSE Department, Tzu-Liang (Bill) Tseng chair

Jun Zheng, E-Quality Control Using 3D Reconstruction and 3D Measurement, IMSE Department, Tzu-Liang (Bill) Tseng chair

Jeff Wheeler, Predicting Propylene Loss with Inferential Model Development Using Design Of Experiments (DoE) And Historical Data, Mechanical Engineering Dept., Yirong Lin chair

2013

Cesar Eduardo Yeep, CJC: An Extensible Checker for the CleanJava Annotation Language, Department of Computer Science, Yoonsik Cheon chair

Daniel Saenz, A Hybrid Modeling Approach for Maintenance and Rehabilitation Treatment Effectiveness of Asphalt Pavements in Texas, Carlos M. Chang chair

David Romo, Predictive Model of Human Factors for Foreign Objects on Deck (FOD), Dr. Bill Tseng chair

Maria Gonzalez, Design of Experiments in Tissue Engineering and Biofabrication, M.S. Industrial Engineering, Dr. Bill Tseng chair

Towhidul Islam, Security Games with Interval Uncertainties, M.S. Computer Science, Dr. Christopher Kiekintveld chair

Elishiah Miller, Applying the Unified Modeling Language for the Development of the Locavore Recon iPhone Application, M.S. Systems Engineering with Computer Science concentration, Dr. Salamah Salamah chair

2012

Zhonghua Hu, M.S. Industrial Engineering, Rough Set Algorithms for Data Mining, Dr. Bill Tseng chair

Roberto Nevarez, M.S. Software Engineering, Dr. Steve Roach chair

Juan Saavedra, Identification of Rework Station Location to Enhance Rework-ability Using Design for Disassembly, M.S. Industrial Engineering, Dr. Bill Tseng chair

Christian Andres Herrera, Development of A Medical Imaging Visualization Software, M.S. Software Engineering, Dr. Steve Roach chair

Eduardo Vasquez, Design Patterns in Software, M.S. Information Technology, Dr. Steve Roach chair

Arturo Maya Pereyra, Video Mosaicing Using Motion Sensors, M.S. Electrical Engineering, Dr. John Moya chair

Jaime Mendez, Visualization for Seismic Tomography (VSeT): Software Requirements Specification, M.S. Computer Science, Dr. Rodrigo Romero chair

Erika S. Ollivier, Body Position Commands for the Visualization Wall, CYBER-ShARE Center of Excellence, UTEP

2011

Sinohe Rodriguez, Position Sensitive Device with Gaussian Response, M.S. Electrical Engineering, Dr. John Moya chair

Alejandra Gallegos, Pavement Management Information System, M.S. Civil Engineering, Dr. Carlos Chang chair

2010

Evelyn Torres, Function Point Analysis in Computer Science Capstone Projects, M.S. Information Technology, Dr. Steven Roach chair

Aditya Chilukuri, M.S. Industrial Engineering, Quality Assessment in Bone Scaffolds Through Internet Based Robotic Using Intelligent Data Mining, Dr. Bill Tseng advisor

Prashanth Devaram, E-Quality: Using Dimensional Index Values Toward Improving Classification Accuracy, MSIE, UTEP, Dr. Bill Tseng advisor

Carlos Marco Ituarte-Villarreal, Level of Repair Analysis Modeling Using Genetic Algorithms, MSIE, UTEP, Dr. Jose Espiritu advisor

2009

Dora O. Francis Fernandez, Asset Management Application Towards an Improved Right of Way Acquisition, MS CE, UTEP, Dr. Carlos Chang chair

Delia Villanueva, Multiple Objective Optimization of Performance Based Logistics, MS IE, UTEP, Dr. Heidi Taboada chair

Alvaro Cuevas, Taguchi Approach and the Central Composite Design of Experiments, MS IE, UTEP, Dr. Bill Tseng chair

2008

Reece Lumsden, Lean Methodology in Global Supply Chain of Commercial Aircraft Manufacturing, candidate for a PhD in systems engineering, Missouri S&T

Rahul Patil, Development of an Approach for Business Risk in Early Design (B-RED), MS EM, Missouri S&T

2007

Aaron A. Tucker, Design of Experiments as a Means of Lean Value Delivery to the Flight Test Enterprise, MS SE, UMR.

Evidence of Teaching Quality

From: Anuar Aguirre [mailto:ajaguirre3@miners.utep.edu]
Sent: Thu 12/10/2009 7:45 PM
To: Smith, Eric D
Subject: Systems Engineering Fundamentals course

Teacher,
First of all, I want to thank you. This was a course that really challenged me intellectuality, so it makes me feel really proud that I could succeed in it. If you need anything from me, please ask me and will feel very proud to do it.

Thanks for everything,
Anuar Aguirre

From: Anderson, Mark [mailto:mark.anderson@boeing.com]
Sent: Thu 11/30/2006 9:14 PM
To: Smith, Eric D.

Dr. Smith

I will fill out the evaluation this weekend, but I want to tell you that you did a great job. Initially I was challenged by the depth and the amount of material - especially the math. But I began to appreciate your accessibility which was evident as I reviewed the lectures. And it strengthened the Synergy team as we communicated and discussed the material. As a result, I have new friends located at other Boeing facilities. Of course, I would prefer more of the systems design theory and a bit less of the analysis. <smile> But, jeez, who wouldn't? <big smile>

You have considerable knowledge of the material, so now you have to continue to work on presentation, editing of the excess material, and finding ways to make the theory and analysis relevant to blurry-eyed (over-worked and complaining) Boeing engineers... Keep it fresh!

Thank you again!

~ Mark

List of courses taught

University of Texas at El Paso

Systems Engineering Fundamentals SE/EE 5341
Systems Engineering Fundamentals SE/EE 5341 Online
Systems Requirements Analysis SE/EE 5343, CS5385 Online
Systems Architecting & Design SE/EE 5346
Systems Engineering IE 3331
Quality Engineering Program, online curriculum development
Project Practicum SE/EE 5345
Quality Engineering IE 5387
Individual Studies IE/SE 5391

Missouri University of Science and Technology

Sys Eng 368 Systems Engineering Analysis I
Sys Eng 412 Complex Engineering Systems Project Management
Sys Eng 413 Engineering Economy
Sys Eng 468 Systems Engineering Analysis II

National Technological University

SY710E Systems Engineering Process
NSYS6140 Nonlinear Optimization
NSYS6160 Systems Engineering Management
NMGT6310 Introduction to Engineering Management

Evidence of use of technology to complement instruction

Online Course developed:

SE 5341 Systems Engineering Fundamentals
SE 5343 Requirements Analysis
SE 5346 Architecture & Design

Lockheed Martin Aeronautics Corp., Mission Success and Talent Development initiative, UTEP course:
IE 5387 Quality Engineering

The following technologies have been used:

Course Mine
Blackboard
Audio Recordings
Video Recordings
Animations

All courses taught are Blackboard based, with all lectures currently delivered being recorded and posted to Blackboard. The recordings are done with an audio recorder, and the resultant file can be used to generate transcripts for the hearing-disabled. We are recording class sessions with video, in order to create video stock for the creation of web courses. Currently, a student team in the SE Fundamentals course is developing a report on the use of Pod Casting for quick and efficient replay of class sessions.

On-campus courses usually involve the use of multiple software packages, including: Palisade Decision Tools; IBM Rational Rhapsody; Enterprise Architect; Ventana Systems VenSim; Vitech Corp.'s CORE; Risk Sim; Microsoft Excel; MatLab; IBM's DOORS; and others

Statement of Service Philosophy

Service, defined as the active, constructive and useful interaction with the University and broader communities at the city, state, national and international level, as well as communities characterized by emphasized aspects, such as social or cultural aspects, always underlies progress gained academic role.

It is natural that everyone wants to be in respectful contact with the broader communities, but, realistically speaking, this should only happen after the fulfillment of one's appointed career work in developing technological benefits for society.

Service, then, begins and grows with the study and training necessary to be able to provide value to the broader community. After skills and knowledge are acquired, it is natural to engage the community, disseminate the value of experience, and receive the community's welcoming hospitality in return. One cannot claim to be of service unless one has opened one's heart to everyone.

I hope to fulfill my Earthly duty to provide for my family and my community, and to do so within an honest and verifiable sustainability in our collective Earthly home, including all the animals and plants with which humans are undeniably interdependent.

Over the past 5 years, I have led and co-investigated environmental projects, including the Wide-Area Student Busing Project, the Energy Dashboard project, and an Electric Vehicle Charging Station project on the UTEP campus. The Student Busing System is geared toward decreasing student commute time and expense, and thus increase student focus on education, while improving air quality in the greater El Paso area.

In 2010, I was funded as a Summer Fellow by the NSF and Department of Energy FaST (Faculty and Student Team) program to study Models Describing Joint Behavior of Electric Power Markets and Systems, at the GridWise Program at the Pacific Northwest National Laboratory, Electrical Power Systems Integration Group.

Currently, I advise student teams working on the Miner Recycling System – which will extract previously unachieved value from UTEP's recyclables supply chain – and on the B-Cycle Bike Share System – which will provide environmentally healthy personal movement to students, staff, faculty and visitors of the University in concurrent with the green Campus Transformation of UTEP's Centennial Celebration.

I see my strongest service contributions involving the engineering of systems, and, as a teacher, this involves the engineering of education.

Eric D. Smith

Department Service and Committees

ISE Undergraduate Program Director, 2018-Present
ABET Coordinator, IMSE Dept. 2018-Present
SACS Coordinator, 2012-2017
SE, IE & MFG Graduate Program Director, 2014-2017
MFG IMSE Assistant Professor, hiring committee chair, 2014
Clinical Professor hiring committee 2013
Faculty Search Committee, Healthcare & Ergonomics, IMSE Department, 2012
ABET Review of IMSE Dept., 2012-Present
SE Program review committee, 2012-Present
SACS: Southern Association of Colleges & Schools, Program Review, 2011-2012
Library Liaison, IMSE Department, 2011-Present
Advising Committee, IMSE Department, 2008-Present
Graduate Studies Committee, IMSE Department, 2008-Present
Undergraduate Studies Committee, IMSE Department, 2008-Present
Systems Engineering Program Admissions Committee, 2009-Present
Systems Engineering Program Curriculum Committee, 2009-Present
Systems Engineering Day, Organizing Committee, 2010
Adjunct Faculty, Electrical & Computer Engineering, 2010-Present
Four-Day Scheduling Committee, IMSE Department, 2010
ABET Accreditation & Coordination Committee, 2008-2009
Graduate Council Presenter, Systems Engineering Program Curriculum, 2010

College Service and Committees

Faculty Council, College of Engineering, 2017-Present
Community Engagement Committee, 2017-Present
Faculty Search Committee, IMSE and ME joint, 2018
Faculty Search Committee, IMSE Healthcare, 2012
Library Committee, 2012
Faculty Council, College of Engineering, 2011-2014
Department Chair Search Committee, for the IMSE Department, 2010
Systems Engineering Faculty Search Committee, 2010
Systems Engineering Day, Organizing Committee, 2009
Systems Engineering Admissions Committee, 2008-2009
Systems Engineering Program curriculum and course development, 2008-2009
Mining for Majors, Engineering Booth, 2010

University Service and Committees

Graduate Council Representative for the College of Engineering, 2023-present
Global/Climate Change Working Group, UTEP Community of Practice, 2022-pre
Faculty Welfare, Responsibility and Ethics Committee, 2017- Present
Student Conduct Committee, 2015-Present
Faculty Senate of UTEP, IMSE Dept. Representative, 2014-2017

Graduate Council, Member-at-Large, 2014-2017
Library Committee, of Faculty Senate, 2012-2017
Open Learning Initiative Focus Group, Office of the Provost, 2011
Research Institute for Manufacturing and Engineering Systems (RIMES) participation and development, including software (CORE) and laboratory development, 2008-Present
Center for Environmental Resources Management (CERM), 2010-Present
Graduate Faculty Member, 2008-Present

Membership in Professional Societies

INCOSE: International Council on Systems Engineering
Board Member of Enchantment Chapter, Albuquerque, NM, 2009-2021
Advisor to Student Division, UTEP-INCOSE, El Paso, 2009-Present
Complex Systems Working Group
IISE: Institute of Industrial & Systems Engineers
Advisor to the UTEP Chapter of IISE, 2017-2020
Session Chair, Healthcare Systems, Disease Modeling and Analysis, Industrial Engineering Research Conference (IERC), Reno, NV, 2011
SHS: Society of Health Systems
ITEA: International Test & Evaluation Association
ASEE: American Society of Engineering Education
ASEM: American Society of Engineering Management
PSI: Philosophic Systems Institute

Professional Committee Membership

INCOSE Enchantment Chapter, Member of the Board, 2015-2019
Comite Cientifico del IV Encuentro Iberoamericano de Investigación Operativa y Ciencias Administrativas, Santa Cruz, Bolivia, 2013.
Organizing Committee Member, Encuentro Iberoamericano de Investigación Operativa y Ciencias Administrativas, ITESM, Monterrey, México, 2010
Complex Adaptive Systems conference, Organizing Committee Member, 2011
Board Member, Enchantment Chapter of INCOSE, Albuquerque, NM, 2009-Present
Organizing Committee Member, Encuentro Iberoamericano de Investigación Operativa y Ciencias Administrativas, ITESM, Monterrey, México, 2010

Public Service

UTEP Celebrates, Ysleta Valley View Middle School visit, 2014
SECC: State Employee Charitable Campaign, IMSE Department and RIMES Center contact, 2011-2012, 2013-2014
Project Move, community restoration, Reynolds House, El Paso, TX, 2010
Society of Hispanic Professional Engineers (SHPE)/Advancing Hispanic Excellence in Technology, Engineering, Math and Science (AHETEMS) Foundation, Scholarship Reviewer, 2009-2010

Career Fair Presenter, Dr. Green Elementary School, El Paso, TX, 2009
Rotary International, Rotary Club of Rolla, MO, 2007-2008
Chair of International Programs, Rotary Foundation Committee
Paul Harris Fellow

Service to the Profession

Conference Organizing Committee

Complex Adaptive Systems Conference, Chicago, IL, 2011
Complex Systems, Session Chair
Sustainability and Complexity, Session Chair

Panel Reviews

NSF, RED: Revolutionizing Engineering Departments, 2023
National Science Foundation (NSF), ERC: Engineering Research Centers, 2018
National Science Foundation (NSF), Innovations in Engineering Education, Curriculum and Infrastructure (IEECI) Program, 2010
National Science Foundation (NSF), Engineering Design and Innovation (EDI), 2010

Editorial Board Member

American Journal of Industrial and Business Management (AJIBM)
International Journal of General Systems (IJGS)
International Journal of Economics, Business and Finance (IJEBF)

Journal Ad-Hoc Reviewer

AI by MDPI
IEEE Systems Journal
International Journal of Conflict Management
Challenges Journal
Journal of Enterprise Transformation
International Journal of Production Research
International Journal of Conflict Management
The Open Cybernetics and Systemics Journal
Systems – Open Access Journal by MDPI
Systems Engineering, the journal of INCOSE
IEEE Transactions on System, Man and Cybernetics
Journal of Computer Integrated Manufacturing
Risk Analysis journal

Book Reviewer

SEBoK: Systems Engineering Book of Knowledge of INCOSE, IEEE-CS, SERC

Conference Paper Reviewer

American Society for Engineering Education, 2014-Present
Complex Adaptive Systems Conference (CAS), 2011 & 2012
American Society of Mechanical Engineers (ASME) / Japan Society of Mechanical Engineers (JSME), International Conference on Materials Processing
Institute of Industrial & Systems Engineers (IISE)
Industrial Engineering Research Conference (IERC)
Artificial Neural Networks in Engineering (ANNIE)

References

Dr. Terry Bahill, Professor, Department of Systems and Industrial Engineering, University of Arizona. terry@sie.arizona.edu (520) 621-6561
Dr. John H. Hughes M.D., Retired Naval Surgeon and Medical Administrator, University of Arizona, crackerjack@pol.net, (520) 298-8511
Dr. Goldberg, Jeffrey B. Associate Dean, Engineering & Mines, University of Arizona. jbgoldbe@email.arizona.edu (520) 621-6547
Dr. Smith, J. Cole, Professor of Industrial and Systems Engineering, University of Florida at Gainsville. cole@ise.ufl.edu (352) 392-1464 ext. 2020