

SATYA ADITYA AKUNDI

E-201E, 500 W. University Avenue, Engineering Building,
The University of Texas at El Paso, Texas, United States.
Email: sakundi@utep.edu, Office: (915)-747-8652
Nationality: Indian

RESEARCH INTERESTS

My domain interests lie in Systems Engineering, Engineering Education, Complex Systems, and Systems Simulations. My core research interest lies in understanding and exploring on how the concepts of information theory can be applied towards better understanding current complex socio-technical systems. Further, I am interested in exploring cross domain identification of what complexity is and in understanding how it is perceived from a. product, service and enterprise perspective. This research will enable to breakthrough quantitative and qualitative models of complex phenomenon where current models are either not fully based on first/basic principles or are based on empirical and ad hoc metrics for which the first/basic principles are not yet well known.

EDUCATION

Ph.D. in Electrical and Computer Engineering August, 2016
Industrial and Systems Engineering Track
Academic Advisor: Eric D. Smith, Ph.D.
Dissertation Topic: Information Entropy Measures Applied to Hierarchical Complex Technical and Socio-Technical Systems
Overall GPA: 3.8
The University of Texas at El Paso, El Paso, Texas.

Graduate Certificate in Systems Engineering August, 2016
Overall GPA: 4.0
The University of Texas at El Paso, El Paso, Texas.

Master of Science in Electrical and Computer Engineering December, 2011
Overall GPA: 3.66
The University of Texas at El Paso, El Paso, Texas.

Bachelors in Electronics and Communications Engineering May, 2009
Overall GPA: 3.46
Jawaharlal Nehru Technological University, India

HONORS AND AWARDS

Outstanding Junior Faculty, 2017
Manufacturing Division, American Society of Engineering Education (ASEE).

TECHNICAL SKILLS

- Familiar with Department of Defense Architectural Frameworks (DoDAF) 2.0 & 1.5
- Familiar with Ministry of Defense Architectural Framework (MoDAF)
- Experienced in SIMIO software
- Experienced and Proficient in Systems Trade off Analysis
- Experienced with System Dynamics and Zachman Framework
- Experienced in “GaBi” Product development and Sustainability Software
- Proficient in UML, OOA/D
- Experienced in IBM RATIONAL RHAPSODY, ENTERPRISE ARCHITECT
- Acquainted with PALISADE Decision Tools Suite
- Experienced in ADDITIVE MANUFACTURING (FDM Technology)
- Acquainted in Solid Works & D.O.E
- Familiar in Life Cycle Analysis and Life Cycle Assessment
- MS Office

EXPERIENCE

Full-Time Academic Experience

Research Assistant Professor, 10/16 to Present
Industrial, Manufacturing and Systems Engineering Department,
University of Texas at El Paso (UTEP)

Research Center Experience

Research Associate, 10/16 to Present
Research Institute for Manufacturing and Engineering Systems (RIMES),
El Paso, Texas.

Teaching Experience

Instructor 10/16 to Present
Course 1: Industrial Systems Simulations (IE 4353)
Number of Students 54
Course 2: Computer Simulation Applications (IE 4395/IE 5357)
Number of Students 26
University of Texas at El Paso (UTEP)

Teaching Assistant
Course 1: Green Energy Manufacturing,
Course 2: Green Energy Materials and Engineering (MECH 4395/5390 and IE 4395)
Course 3: Systems Engineering Fundamentals (IE 3331)
Course 4: Principles of Experimental and Engineering Design (ESE-6306)
University of Texas at El Paso (UTEP)

TEACHING ACOMPLISHMENT

New Courses Developed

The University of Texas at El Paso (UTEP)

Computer Simulation Applications (IE 4395/IE 5357)

Industrial Systems Simulations (IE 4353)

Green Energy Manufacturing (IE 4395/ IE 5390 / MFG 5398)

PUBLICATIONS

Journal Papers

- **Aditya Akundi**, Francisco Zapata and Eric Smith, *UML Interpretation and Test Suite generation of Complex Systems*, ITEA (International Test & Evaluation Association) Journal, Volume 35, Number 1, March edition, 2014.
- **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.

Journal Papers Under Review

- Aditya Akundi, and Eric D. Smith, *Fractal-COSYSMO Systems Engineering Cost Estimation for Complex Networks*. Submitted to the International Journal of Engineering Management and Economics.
- Aditya Akundi, Eric Smith, and Bill Tseng, *Information Entropy Applied to Software-Based Control Flow Graphs*. Submitted to Journal of Systems Science and Complexity.
- Aditya Akundi, Eric Smith, and Bill Tseng, *Application of Information Entropy for Classroom Structural Assessment*. Submitted to Engineering Education Letters.

Book Chapters

- 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.

Conference Publications

- **Akundi, A.** (2017, June), *Enhancing Additive Manufacturing Education Using Virtual Rapid Prototyping Simulator Tool* Paper presented at 2017 ASEE Annual Conference & Exposition, Columbus, Ohio. <https://peer.asee.org/28271>
- **Akundi, A.**, & Lopes, A. J. (2017, June), *Maximizing STEM Relevance Through Project-Based Learning for Freshman Engineers* Paper presented at 2017 ASEE Annual Conference & Exposition, Columbus, Ohio. <https://peer.asee.org/27422>

- **Akundi, A.**, & Smith, E. D., & Tseng, T. B. (2017, June), *Integration of Additive Manufacturing Technology in Curricula to Enhance Concept-Based Learning* Paper presented at 2017 ASEE Annual Conference & Exposition, Columbus, Ohio. <https://peer.asee.org/28564>
- Tseng, T. B., & **Akundi, A.**, & Olivarez, A., & Smith, E. D., & Chiou, R. (2017, June), *Workshops and Seminar Series to Enhance and Create Opportunities for Innovation in Green Manufacturing and Engineering* Paper presented at 2017 ASEE Annual Conference & Exposition, Columbus, Ohio. <https://peer.asee.org/29193>
- Tseng, T. B., & Lin, Y., & Love, N., & **Akundi, A.**, & Bulanon, D. M., & Jack, H. (2017, June), *Enhance the Student Learning Outcome in Green Energy Engineering using Combined Lecture and Seminar* Paper presented at 2017 ASEE Annual Conference & Exposition, Columbus, Ohio. <https://peer.asee.org/28269>
- Tzu-Liang Tseng, and **Aditya Akundi**. (2017, August), *LEGO Based Low Cost Teaching for Enhancing Manufacturing Education*. Paper presented at 2017 Hawaii University International Conference, Hawaii.
- Tzu-Liang (Bill) Tseng, Amit Lopes, Chun-Che Huang, Richard Chiou, Hoejin Kim, and **Akundi Akundi**, *SCARA Robot Parameter Evaluation for Embedding Structured Electronics Using Design of Experiments (DOE)*, IISE Annual Conference, 2017.
- Zhonghua Hu, Tzu-Liang (Bill) Tseng, Jianguo Wu, Richard Chiou, and **Aditya Akundi**, *SEM Based Image Data Mining for Quality Control of Nanofiber Reinforced Piezo-Electric Nanocomposites*, IISE Annual Conference, 2017.
- Tseng, T. B., & **Akundi, A.**, & Chiou, R. (2016, June), *Technology Integration Across Additive Manufacturing Domain to Enhance Student Classroom Involvement* Paper presented at 2016 ASEE Annual Conference & Exposition, New Orleans, Louisiana. 10.18260/p.26074
- Tseng, T. B., & **Akundi, A.**, & Saavedra, J. A., & Smith, E. D. (2016, June), *A Comparative Study of Teaching Lean Manufacturing via Hands-On and Computer-Aided Simulation* Paper presented at 2016 ASEE Annual Conference & Exposition, New Orleans, Louisiana. 10.18260/p.26281
- Tseng, T. B., & **Akundi, A.**, & Chiou, R. (2016, June), *Social Network Platforms in Educational Settings: A Network Analysis Approach to Analyze Online Student Interactions* Paper presented at 2016 ASEE Annual Conference & Exposition, New Orleans, Louisiana. 10.18260/p.25827
- Tseng, T. B., & **Akundi, A.**, & Chiou, R., & Olivarez, A., & Smith, E. D. (2016, June), *Enhancement of Sustainable Manufacturing Engineering Education for Smart Generation through Workshop and Seminars* Paper presented at 2016 ASEE Annual Conference & Exposition, New Orleans, Louisiana. 10.18260/p.26687
- Tseng, T. B., & **Akundi, A.**, & Wu, T., & Lin, Y., & Jack, H. (2016, June), *Evaluating Individual Learning Effectiveness on Project-Based Learning Methodology by Comparing Team-Based and Individually Assigned Projects* Paper presented at 2016 ASEE Annual Conference & Exposition, New Orleans, Louisiana. 10.18260/p.26753
- Bill Tseng, **Aditya Akundi**, Richard Chiou, Ryan Wicker and Zhonghua Hu, *Development of 3D-Virtual Facility Tutorial Implemented in Mobile Environment to Enhance Additive Manufacturing Education*, 122nd Annual Conference & Exposition of the American Society of Engineering Education (ASEE), Seattle, WA, 2015.
- Bill Tseng, **Aditya Akundi**, and Juan Saavedra, *Augmenting High School Student Interest in STEM Education Using Advanced Manufacturing Technology*, 122nd Annual Conference & Exposition of the American Society of Engineering Education (ASEE), Seattle, WA, 2015.
- Bill Tseng, Richard Chiou, Radian Belu, Oscar Salcedo, **Aditya Akundi**, and Eric Smith, *Enhancement of Green Energy Manufacturing Engineering Education through Project Based*

Learning and Leadership Workshops, 122nd Annual Conference & Exposition of the American Society of Engineering Education (ASEE), Seattle, WA, 2015.

- Bill Tseng, **Aditya Akundi**, and Norman Love, *Instructional Setting on Student Learning Effectiveness Using Flipped Classroom in an Engineering Laboratory*, 122nd Annual Conference & Exposition of the American Society of Engineering Education (ASEE), Seattle, WA, 2015.

- Eric Smith, Oscar Salcedo, and **Aditya Akundi**, *Jury Procedures for Systems Engineering Decision Making*, 122nd Annual Conference & Exposition of the American Society of Engineering Education (ASEE), Seattle, WA, 2015.

- 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.

- 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.

- **Aditya Akundi** and Eric D. Smith, *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.

- **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.

Abstracts and Presentations

- **Aditya Akundi**, Sergio-Luna Fong, 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.

- **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.

- **Aditya Akundi**, Mario Salomon, and Juan Pablo Fernandez, *University Bike Share Systems: A Systems Engineering Techno-Socio Economic Approach*, International Symposium of INCOSE, Philadelphia, PA, 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.

- 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.

PROPOSALS

Funded Support

University Transit System: Student Busing Pilot Study, Green Fund of the Student Government Association of UTEP, Eric D. Smith, Faculty Advisor, **Aditya Akundi**, Jorge Regalado, Sergio Luna-Fong, and Carlos Sanchez, Research Assistants, 2012-2013, \$70,000.

<http://www.utepprospector.com/news/commuting-alternative-by-the-studentbusing-system-project-1.3015282#.UW2yqaJg9wk>

B-Cycle Systems for UTEP, Juan Pablo Fernandez, **Aditya Akundi**, Pedro Diaz, Mario Salomon, Greg McNicle - 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.

Pending Support

Award Agency: **National Science Foundation**,

Project Duration: 10/1/2018 - 9/30/2021

Title: *Smart Manufacturing Connecting Cyber Physical Systems to Enterprise for STEM Education*

Award Amount: \$1,200,000. (Subcontract from Drexel University for \$300,000); Role: **Co-PI**

Award Agency: **Department of Education**

Project Duration: 10/1/2017 - 9/30/2020

Title: *Green Engineering Technology Infused Learning and Support Systems for Enhancing Student Career Pathways*

Award Amount: \$4,000,000; Role: **Co-PI**

Award Agency: **Department of Defense (Army Research Laboratory)**

Project Duration: 10/1/2017 - 9/30/2020

Title: *Center of Excellence for Promoting Veterans and Minority Students in Defense STEM*

Award Amount: \$4,497,533; Role: **Co-PI**

Proposals Submitted

Cyber Enabled Approach for Enhancing Green STEM Learning through Online Communities and Innovation and Incubation Center, Minority Science and Engineering Improvement Program, Bill Tseng (PI), Satya Aditya Akundi(Co-PI), Yirong Lin (Co-PI), Norman Love(Co-PI), Richard Chiou(Co-PI),2016, \$900,000.

Fostering Graduation Pathway in Green STEM Disciplines through Cyber Learning Community, NST-STEM Program, Bill Tseng (PI), Satya Aditya Akundi(Co-PI), Yirong Lin (Co-PI), Norman Love(Co-PI), 2017, \$1,000,000.

PROFESSIONAL SERVICE

Conference Organizing Committee

Industrial, Manufacturing and Systems Engineering Day
The University of Texas at El Paso

Conference Paper Reviewer

American Society of Engineering Education

Journal Reviewer

IIE Transactions on Health Care Systems

Membership in Professional Societies

INCOSE: International Council on Systems Engineering
Complex Systems Working Group
System of Systems Working Group
President to Student Division, UTEP-INCOSE, El Paso, TX, 2014-2016
ASEE: American Society of Engineering Education
Secretary, Manufacturing Division, 2017
IIE: Institute of Industrial Engineers