Oscar A. Mondragon, Ph.D.

Clinical Associate Professor
oamondragon@utep.edu
 (915) 747-8015 office

Industrial, Manufacturing & Systems
Engineering Department
University of Texas at El Paso
500 W. University Ave.
Engineering Annex Rm. A242
El Paso, TX 79968-0742

EDUCATION

The University of Texas at El Paso, USA   **May 2004**

Doctoral Program in Computer Engineering

Dissertation targets the problems of incomplete and incorrect specifications of software properties through the use of extended patterns and the automated generation of formal specifications in Future Interval Logic (FIL) and Meta-Event Definition Logic (MEDL).

California State University, Sacramento, USA   **May 1996**

Master of Science in Computer Science with Emphasis in Software Engineering

Project conveys an analysis of object-oriented methodologies and describes their support for real-time systems.

ESIME at National Polytechnic Institute (IPN), Mexico   **Dec 1992**

Bachelor of Science in Communications and Electronics

Thesis discusses the implementation details of a tutorial maker system including algorithms and data structures for managing recursive multilink lists and memory mappings.

CERTIFICATIONS

- Certified Software Engineering Professional (CSDP), IEEE, 2002 – present
- Authorized Instructor, Introduction to Capability Maturity Model Integration (CMMI) for Development & Services, Software Engineering Institute, 2005 – present
- Research Candidate, National Research System, Mexico, 2005 – 2009
- Certified Personal Software Process Developer, Software Engineering Institute, 2010 – present
- Personal Software Process Authorized Instructor, Carnegie Mellon Software Engineering Institute, 2010 – present
- Certified TSP Coach, Carnegie Mellon, Software Engineering Institute, 2011 – present
- Certificate in CMMI, Carnegie Mellon, Software Engineering Institute, 2009.

AWARDS & HONORS

- Outstanding Doctoral Student 2005, University of Texas at El Paso
- Outstanding Dissertation 2004, University of Texas at El Paso
- Dodson Doctoral Fellowship, 2002-2003, University of Texas at El Paso
- CONACYT Scholarship for doctoral studies, 1999-2003.
- Fulbright grantee, Master's degree 1994-1996, USA government.
- Lockheed Martin Research Grant, Project: Real Time Object-Oriented Analysis, spring 1996.
- 2nd place for Best College Thesis by Mexican Association for Informatics and Engineering, 1992.
- Annual Research Award, Computer Science, National Polytechnic Institute (IPN), Mexico City, 1991
- Research Fellowship, National Polytechnic Institute, Mexico City, 1989 -1992.

TECHNICAL SKILLS

- LTL, FIL, MEDL, PROMELA, Visual C++, Pascal, Assembly, Visual Basic, Btree, Process Dashboard
- Prolog, Lisp, Lotus Notes, Windows, UNIX, MS-DOS, Word, PowerPoint, Visio, Ventura Publisher
- Software Process Improvement; Process Definition; Verification & Validation; Requirements Engineering; Quality Assurance.

SELECTED PUBLICATIONS

- Mondragon, O. "Gestion de Procesos: Integrando TSP Y CMMI," Software Guru Conocimiento en Práctica, No. 31, pp. 38-41, Marzo - Abril, 2011, Mexico.
- Mondragon, O. A. and Edgar D. Fernández, "AIM Case Study: Moving from TSP to CMMI ML3," 6th Team Software Process Symposium Proceedings, Pittsburgh, Pennsylvania, Sep. 22, 2010, pp. 39-44.
- Mondragon, O. "Integrando TSP Y CMMI: Lo mejor de los dos mundos," V Taller de Calidad en las Tecnologías de la Información y las Comunicaciones, Havana, Cuba, Feb. 9, 2011,
- Mondragon, O., Gates, A., Roach, S., Mendoza, H., and Sokolsky, O., "Generating , Properties for

Oscar A. Mondragón

Runtime Monitoring from Software Specification Patterns," International Journal of Software Engineering and Knowledge Engineering, Vol. 17, No. 1, pp. 107-126, World Scientific Publishing, Feb. 2007.

- Mondragon, O., "Addressing Infrastructure Issues in Very Small Settings," Proceedings of the First International Research Workshop for Process Improvement in Small Settings 2005, Special Report, CMU/SEI-2006-SR-001, Pittsburgh, PA, Jan. 2006, pp. 5-11.
- Salamah, S., Gates, A., Roach, S., and Mondragon, O., "Verifying Pattern-Generated LTL Formulas: A Case Study," 12th International SPIN Workshop, LNCS vol. 3639, Springer, San Francisco, CA, USA, August 22-24, 2005, pp. 200-220
- Mondragon, O., Gates, A., Mendoza, H., and Sokolsky, O., "Generating Properties for Runtime Monitoring from Software Specification Patterns," Proceedings of the 17th International Software Engineering and Knowledge Engineering Conference (SEKE), Taipei, Taiwan, July 14 – 16, 2005.
- Mondragon, O., and Gates, A., "Supporting Elicitation and Specification of Software Properties through Patterns and Composite Propositions," International Journal of Software Engineering and Knowledge Engineering Conference, Vol. 14, No. 1, World Scientific Publishing, Singapore, Feb. 2004, pp. 21-41.
- Mondragon, O., "Property Elicitation and Specification Process (Prospec)," International Conference on Software Engineering ICSE 03, Doctoral Symposium, Portland, OR, May 2003, pp. 765.
- Mondragon, O., Gates, A., and Roach, S., "Prospec: Support for Elicitation and Formal Specification of Software Properties," the Runtime Verification Workshop, ENTCS, 89(2), CO, USA, July 2003, 67-86.
- Mondragon, O., Gates, A., Payne, M. and Roach, S., "Instrumentation of Intermediate Code for Runtime Verification,"28th Annual IEEE / NASA Software Engineering Workshop (SEW-28 2003), IEEE Computer Society, ISBN 0-7695-2064-2, Greenbelt, MA, USA.Dec 3-4, 2003
- Mondragon, O., Gates, A., and Kassem, F., "Automated Support for Property Specification Based on Patterns," 15th International Conference SEKE, California, July 1-3, 2003, pp. 174-181.
- Mondragon, O., Gates, A., Roach, S., "Composite Propositions: Toward Support for Formal Specification of System Properties," Proceedings of the 27th NASA/IEEE Software Engineering Workshop, Greenbelt, MA, December 2002, pp. 67-74.
- Gates, A., Mondragon, O. "FasTLInC: A Constraint-based Tracing Approach," The Journal of System and Software, Vol. 63, Elsevier Science, Amsterdam, Netherlands, 2002, pp. 241-258.
- Gates, A. Q., Roach, S., Mondragon, O., Delgado, N., "DynaMICs: Comprehensive Support for Run-Time Monitoring," Runtime Verification Workshop 2001 (RV '01), Paris, France, July 2001, pp. 61-77
- Garcia, H., Gibson, G., Cabrera, S., Mondragon, O., "CAD Tools for the Modularly Configured Attached Processors," Midwestern Symposium on Circuits and Systems, Las Cruces, N.M., Aug. 1999.

SELECTED CONFERENCES (Talks)

- Mondragon, O., "Identificación, definición y uso de indicadores para la administración básica de proyectos," 6to Congreso Internacional en Ingeniería de Software y sus Aplicaciones (CIISA 2012), Guadalajara, México, Mayo 24, 2012.
- Mondragon, O., "Integrando TSP Y CMMI: Lo mejor de los dos mundos," V Taller de Calidad en las Tecnologías de la Información y las Comunicaciones, Havana, Cuba, Febrero 9, 2011.
- Mondragon, O., "Accelerated Improvement Method (AIM) - SEI," 5to. Congreso Internacional en Ingeniería de Software y sus Aplicaciones (CIISA 2011), Guadalajara, México, Mayo 26, 2011.
- Mondragon, O., "Team Software Process for Services," 5to. Congreso Internacional en Ingeniería de Software y sus Aplicaciones (CIISA 2011), Guadalajara, México, Mayo 26, 2011.
- Mondragon, O. and Willett, A. "Applying TSP for Services: Seven lessons Learned," 6th Annual Software Engineering Institute Team Software Process Symposium, Atlanta, Georgia, Sep. 21, 2011.
- Mondragon, O. and Fernández, E. "AIM Case Study: Moving from TSP to CMMI ML3," 5th Annual Software Engineering Institute Team Software Process Symposium, Pittsburgh, Penn, Sep. 22, 2010.
- Mondragon, O., "¿Cómo preparar a un Grupo de Ingeniería de Procesos (EPG) exitoso?," 4to Congreso Internacional en Ingeniería de Software y sus Aplicaciones (CIISA 2009), Guadalajara, México. Sep. 09, 2009.
- Mondragon, O., "Cómo prepararse para administrar un proyecto de mejora de procesos" Software Engineering Process Group Latin America, Mar de Plata, Buenos Aires, Nov. 14, 2008.
- Mondragon, O., "Requirements Engineering Workshop," Congreso Internacional en Ingeniería de Software y sus Aplicaciones (CIISA 2006), Guadalajara, México. Sep. 08, 2006.

Oscar A. Mondragón

Clinical Associate Professor	*University of Texas at El Paso, USA*	*Sept 2014 – Present*

Teaching – Systems Engineering Master's Program
- SE 5344 Integration, Verification & Validation
- SE 5345 Project Practicum
- SE 5348 Systems Modelling and Simulation

Program Director – Online System Engineering Master's Program
- Coordinate training and activities for the online course development effort
- Coordinate stakeholders involvement
- Manage risk and mitigation activities

Consultant	*Software Industry Excellence Center, Mexico*	*May 2004 – July 2014*

SPI – Software Process Improvement (SPI)
- Guided companies in their SPI programs. 2004 – 2012.
- Adapted methodologies from the European Software Institute to small settings in Latin America. 2004.
- Developed a workshop to manage and oversight SPI projects allowing managers and the Engineering Process Group (EPG) to handle organizational changes at numerous companies. 2005.
- Supported the definition of the consultant approach for the Software Industry Excellence Center. 2004.
- Conducted seminar for developers and senior managers in Guatemala, Cuba, and Mexico. 2005 – 12.

CMMI - Capability Maturity Model Integration (CMMI)
- Coordinated a CMMI implementation project for ten companies by providing common artifacts and handling workshops to share weaknesses and strengths. 2004 – 2005.
- Taught "Introduction to CMMI Development" and "CMMI Services" 30 times in Latin America. 2005 -
- Consulted more than ten CMMI implementation projects for companies in Mexico and Latin America at maturity levels 2, 3 and 4. 2004 -2012.
- Conducted pilot projects and guided the institutionalization of process assets for several companies.
- Performed gap analysis of organizational processes identifying strengths and weaknesses. 2004 – 12.
- Performed several Standard CMMI Appraisal Method Process Improvement (SCAMPI) class B for companies at maturity levels 2 and 3. 2006 - 2012
- Participated in the evaluation team of several SCAMPI A for companies in Mexico and Latin America.
- Talked at several SPI conferences (Software Engineering Process Group – Latin American, SEPG-LA, and Congreso Internacional Ingeniería Software y Aplicaciones, CIISA) in Mexico and Latin America. 2006 -2012.

PSP – Personal Software Process
- Taught "Personal Software Process, PSP," "Team Member, TM," and "Leading a Development Team, LDT" courses at several locations in Latin America. 2011 – 2013.

TSP – Team Software Process
- Coached software development teams that implements TSP in Mexico and Central America. 2010 – 13.
- Coached the Engineering Process Group as a TSP – Services team, Guatemala. 2012
- Prepared organizations for their TSP evaluation. 2013

Collaboration with the Software Engineering Institute (SEI)
- Reviewed drafts of the Accelerated Improvement Method (AIM) with coaches of the Software Engineering Institute (SEI). 2009.
- Coached, with the Software Engineering Institute support, the first pilot project in Latin America for a Process Improvement team that implemented the Software Engineering Institute (SEI) "Accelerated Improvement Method (AIM)". 2010.
- Coached, with the SEI support, the first pilot project in Latin America for a team that implemented TSP for Services. 2011.

Oscar A. Mondragón

Collaboration with the University (Instituto Tecnológico Estudios Superiores Monterrey, ITESM)

- Taught "Project Management" course for the Computer Science Master's program. 2011 - 2012
- Mentored four master students in their dissertations (Implementing CMMI Services; Development of a quality management system). 2011 – 2012.
- Supported Curricula development for the Software Engineering Mayor and the master's program. 2010.
- Taught requirements engineering seminar in Mexico and Peru. 2008 – 2011.

Collaboration with The Institute of Electrical and Electronics Engineers (**IEEE**)

- Member of the core committee for the "Certified Software Developer Professional" (CSDP) / "Certified Software Developer Associate (CSDA)" 2006 – present.
- Supported the definition and implementation of the new IEEE certification "CSDA". Reviewed the industry survey; identified the key areas and their depth; and participated in the exam definition and exam piloting. 2010.
- Hosted the writing test question workshop to update the CSDP exam in Guadalajara, Mexico. 2008

Instructor   Computer Science Department, University of Texas at El Paso (UTEP)   Aug 2003 – May 2004

- Taught and developed material for the undergraduate courses in Software Engineering (a one year senior project class) and Formal Languages.
- Reviewed project artifacts such as Interview Report, Feasibility Report, Prototypes, Software Requirements Specification (SRS), Traceability Report, Architectural Design, Detailed Design with Protocols, Unit and Integration Test Plans, and Configuration Management Plan.

Research Assistant   System & Software Engineering Affinity Laboratory, UTEP Aug 1999 – June 2003

- Contributed to the development of DynaMICs, a real-time monitor.
- Co-developed an algorithm for the generation of path expressions for non-regular graphs from instrumented and optimized assembly code; contributed to the design of FasTLInC, a requirement traceability tool for integrity constraints.
- Directed the definition and implementation of Property Specification (PROSPEC), a tool for elucidation and formal specification of software properties using patterns and composite propositions.

Research Appointment   Real-time System Laboratory, University of Pennsylvania   Summers 2002 & 2003

- Developed a mapping algorithm to translate software properties written in Future Interval Logic (FIL) to Meta Event Design Language (MEDL).
  - Found inconsistencies in the implementation of Java-MaC, a real-time monitor implemented at UPENN, and in the formal definition of MEDL.
  - Proved that the mapping algorithm preserved the semantics of the software properties and that the algorithm terminates when it receives a well written property in FIL for a given software pattern.
- Elicited and formally specified software properties using PROSPEC for a blood bank case study.

Internship   AT&T Labs, Middle Town, New Jersey   Summer 2001

- Established a template to organize AT&T Network Element commands and programmed network elements through the Netrac-NCI system.

Professor   Instituto Tecnológico Estudios Superiores Monterrey (ITESM), Mexico City   July 1996 – 1999

- Taught and developed material for undergraduate courses including Object Oriented Paradigm (OOP), Software Engineering, Programming Language C & C++, and Analysis & Design Techniques.
- Lead a team to develop an Assembler Pre-Processor System and developed a Graphical Editor System for the Modularly Configured Attached Processor, created at UTEP and funded by National Science Foundation and its Mexican counterpart, CONACYT. Both tools feed a simulator to identify data-flow-bottleneck in architecture layouts of hundreds of microprocessors.
- Customized hands-on seminars based on the needs of private companies in project planning, software requirements, software quality, validation and verification, and Unified Modeling Language (UML).

Consultant   JONIMA, Mexico City   Oct 1996 – May 1998

- Established a software development methodology for a Lotus Notes environment including scenarios with keywords that were translated in technical elements and facilitated automated effort estimation.

Oscar A. Mondragón

SOCIETIES & LANGUAGES

- Upsilon Pi Epsilon Honor Society member, 1996 – present;
- IEEE Sr. Member – September 2013
- Core Committee Member "Certified Software Developer Professional", IEEE 2006– 2014
- Bilingual: English and Spanish