

# GERMÁN HARVEY ALFÉREZ SALINAS, Ph.D.

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## RESEARCH INTERESTS

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Artificial Intelligence, Aspect-Oriented Software Development, Autonomic Computing, Big Data, Computer Vision, Data Science, Dynamic Software Product Lines, Model-Driven Software Development, Service-Oriented Architectures, and Software Product Lines

## ACADEMIC INFORMATION

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I am a member of the IEEE Monterrey Section and the IEEE Computer Society. Recently, I became a research fellow of Peru's National Council for Science, Technology and Technological Innovation (CONCYTEC) - [http://directorio.concytec.gob.pe/appDirectorioCTI/VerDatosInvestigador.do;jsessionid=8198533c7e730193d79f3e27ed59?id\\_investigador=82190](http://directorio.concytec.gob.pe/appDirectorioCTI/VerDatosInvestigador.do;jsessionid=8198533c7e730193d79f3e27ed59?id_investigador=82190)

### Ph.D. in Computer Science

December 2013

- **University:** Universitat Politècnica de València, Spain
- **Thesis Title:** Achieving Autonomic Web Service Compositions with Models at Runtime (<http://hdl.handle.net/10251/34672>)
- **Degree of Praise:** Summa Cum Laude. Chosen as one of the best theses in 2013-2014 at Universitat Politècnica de València (<http://www.upv.es/entidades/EDOCTORADO/info/904322normalc.html>)

### Master of Science in Information and Communication Technology

January 2008

- **University:** Assumption University, Thailand
- **Specialty:** Technology Management
- **Thesis Title:** Aspect-Oriented Driven Variability in Software Product Lines (<https://www.dropbox.com/s/alem0tcwptp0v2x/ThesisHarveyAlferez.pdf>)
- **GPA:** 4.0/4.0. President's Award for Academic Excellence

### Bachelor of Science in Computer Science Engineering

December 2004

- **University:** Universidad EAFIT, Colombia
- **Specialty:** Software Engineering and Databases
- **Thesis Title:** Análisis de un Sistema de Información Bajo la Aproximación de la Orientación a Aspectos. Caso Práctico: Manejo de Solicitudes en la Mesa de Ayuda de Servicios Generales de una Universidad (<http://bdigital.eafit.edu.co:8080/bdng/query/single.xsp?idregistro=1815603>)
- **GPA:** 4.02/5.00

## WORK EXPERIENCE

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**Director, Global Software Lab, School of Engineering and Technology, Universidad de Montemorelos, Mexico**  
August 2014 – Present

- **Duties and Responsibilities:** Lead international software-engineering research and development projects to solve current problems in industry, and society

- **Accomplishments:** Founder of this lab. Several software-related research and development projects have been carried out

**Professor, School of Engineering and Technology, Universidad de Morelos, Mexico**

January 2014 – Present

**Courses Taught:**

- **Undergraduate:** Software Engineering, Artificial Intelligence, Artificial Neural Networks, Natural Language Processing, Pattern Recognition, Computer Vision, English for Engineers, and Introduction to Research
- **Master in Computer Science:** Software Engineering, Object Oriented Programming, Software Development Methodologies, and Research Project

**Researcher, Research Center on Software Production Methods, Universitat Politècnica de València, Spain**

October 2010 – December 2013

- **Duties and Responsibilities:** Ph.D. thesis work at this international research center
- **Accomplishments:** Several top international scientific publications. I led a joint project with Prof. Camille Salinesi and his team at Université Paris 1 Panthéon-Sorbonne. Our results were presented in the Journal of Systems and Software

**Director, Center for Research and Technology Development, School of Engineering and Technology, Universidad de Morelos, Mexico**

August 2008 – September 2010

- **Duties and Responsibilities:** Coordinated lecturers and students in projects with several important institutions such as NASA
- **Accomplishments:** Exponential growth of scientific publications and research projects

**Lecturer, School of Engineering and Technology, Universidad de Morelos, Mexico**

January 2008 – September 2010

**Courses Taught:**

- **Undergraduate:** Emergent Technologies, Object Oriented Programming, Software Engineering, Systems Analysis and Design, and Visual Programming
- **Master in Computer Science:** Object Oriented Methodologies, Software Architectures, Software Engineering, Software Development, and Object Oriented Programming

**Coordinator, Computer Information Systems Department, Faculty of Business Administration, Asia-Pacific International University (Formerly Mission College), Thailand**

August 2007 – December 2007

- **Duties and Responsibilities:** Monitored program quality and integrity. Managed the assessment process (curriculum, advising, placement, cooperative education, and internships). Recruited and supervised associate faculty
- **Accomplishments:** Creation of the IT Evangelistic Team. In this team a group of students developed IT solutions to support education in Southeast Asia

**Sessional Lecturer, School of Education, Avondale College, Australia**

July 2006 – April 2007

Master of Education (Extension in Asia-Pacific International University): Sessional academic employment to support IT-related research projects

**Lecturer, Computer Information Systems Department, Faculty of Business Administration, Asia-Pacific International University, Thailand**

June 2005 – December 2007

**Courses Taught:** Essentials of Computer Programming, Network and Data Communications, Web-Based Application Development, Visual Basic Programming, Systems Analysis and Design, and Computer Business Applications

**Systems Analyst and Web Manager, Information Technology Systems Department, Asia-Pacific International University, Thailand**

June 2005 – July 2007

- **Duties and Responsibilities:** Analyzed, developed, and improved software. Developed the website and the intranet of this university
- **Accomplishments:** Development of The Dorado Project, a multi-layered Web application that integrates several departments

**Systems Analyst, UNE (Formerly Orbitel S.A. E.S.P), Colombia**

July 2003 – December 2003

- **Duties and Responsibilities:** Managed the development cycle of a system for the quality and productivity of the company's processes using the Rational Unified Process (RUP) and the Capability Maturity Model (CMM)
- **Accomplishments:** Pioneer using Visual Studio .NET and MySQL in this international company. The financial benefits of the developed system were presented to the president and vice-presidents of this company

**Researcher, Software Engineering Research Group, EAFIT University, Colombia**

February 2001 – June 2001; January 2003 – May 2003

**Duties and Responsibilities:** Developed and maintained several software tools

**SOFTWARE KNOWLEDGE**

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- **Programming Languages:** Java, .NET (Visual Basic and C#), HTML, JavaScript, C, C++, SQL, and PL/SQL
- **Data Science:** Python and Weka
- **Big Data:** Apache Spark
- **Mathematical and Statistical Analysis:** Statgraphics, WinQSB, and LAPACK
- **DBMS:** Oracle, Oracle Forms, SQL Server, MySQL, PostgreSQL, and MS Access
- **Web Site Design:** Front Page, Dreamweaver, and Flash
- **UML Modeling:** Rational Rose, Visual Paradigm, and Enterprise Architect
- **Application Servers:** IIS and Apache Tomcat
- **Development of Web Services and Web Service Compositions:** Apache Axis2, Apache CXF, and Apache ODE (WS-BPEL)
- **Business Process Management:** Activiti (BPMN2) and Babel
- **Models at Runtime:** EMF and Jena
- **Others:** OSGi, AspectJ, OpenCV, Eclipse, NetBeans, XML, and several free and open-source applications

**Participation as Researcher in European Research Projects**

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- Researcher in the SMART ADAPT Project (TIN2013-42981-P, Ministry of Economy and Competitiveness, Spain): Adaptive Software Development in an Intelligent World. Technological Challenges in Model Driven Engineering. 2015-2017
- Researcher in the EVERYWARE project (TIN2010-18011, Ministry of Science and Innovation, Spain): Building Adaptive Software for Integrating People, Services and Things using Models at Runtime. 2011-2013

## Reviewer

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- Frontiers of Computer Science, Springer.
- Journal of Computational Methods in Sciences and Engineering (JCMSE), IOS Press.
- Journal of Information Technology & Software Engineering, OMICS.
- CyberTech Publishing's International Advisory Review Board.
- 2017 International Conference on Adaptive and Self-Adaptive Systems and Applications, ADAPTIVE 2017, Athens, Greece, February 19-23, 2017.
- 2016 Software Product Lines Conference, SPLC 2016. Beijing, China, September 19-23, 2016.
- 2015 Software Product Lines Conference, SPLC 2015. Nashville, USA, July 20-24, 2015.
- 7th International Conference on Research Challenges in Information Science, RCIS 2013. Paris, France, May 29-31, 2013.
- 25th International Conference on Advanced Information Systems Engineering, CAiSE 2013. Valencia, Spain, June 17-21, 2013.

## Additional Information

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My website contains the following additional information:

- Software development projects: [http://www.harveyalferez.com/software\\_products\\_prototypes.html](http://www.harveyalferez.com/software_products_prototypes.html)
- Projects and presentations in the news (Adventist Review, Adventist News Network, etc.): <http://www.harveyalferez.com/press.html>
- Presentations in several international venues (Andrews University, GAiN, etc.): [http://www.harveyalferez.com/relevant\\_presentations.html](http://www.harveyalferez.com/relevant_presentations.html)
- Podcasts (in Spanish): <http://www.harveyalferez.com/podcasts.html>
- Other interests: [http://www.harveyalferez.com/other\\_interests.html](http://www.harveyalferez.com/other_interests.html)

## Publications

**h-index:** 4 (<https://www.scopus.com/authid/detail.uri?authorId=53363255000>).

### International Scientific Journal Articles

- Heradio, R., Pérez-Morago, H., Alférez, M., Fernández-Amoros, D., Alférez, G.H. (2016). Augmenting measure sensitivity to detect essential, dispensable and highly incompatible features in mass customization. *European Journal of Operational Research*, 248(3), 1066-1077.
- Alférez, G.H., & Pelechano, V. (2014). Facing uncertainty in web service compositions. *International Journal of Services Computing*, 2(2), 1-16.
- Alférez, G.H., Pelechano, V., Mazo, R., Sailinesi, C., & Diaz, D. (2014). Dynamic adaptation of service compositions with variability models. *Journal of Systems and Software*, 91, 24-47.
- Tabares, M. S., Alférez, G.H., & Alférez, E.M. (2008). El desarrollo de software orientado a aspectos: Un caso práctico para un sistema de ayuda en línea. *Avances en Sistemas e Informática, Universidad Nacional de Colombia*, 5(2), 61-68.
- Alférez, G.H., & Poonphon, S. (2007). An aspect-oriented product line framework to support the development of software product lines of web applications. *International Journal of the Computer, the Internet and Management*, 15(SP4), 13.1-13.5.

### International Journal Articles

- Alférez, G.H. (2016). Tweeting in New York City - data science can teach us to sympathize. *Adventist Review*, 193(2), 47-49.
- Alférez, G.H. (2015). Big data for reaching a big world. *Adventist Review*, 192(11), 47-51.

### Scientific Articles in Proceedings of International Events

- Alférez, G.H., Jiménez, J., Hernández-Navarro, H., González, M., Domínguez, R., Briones, A., Hernández-Villalvazo, H. (2016). Application of Data Science to Discover the Relationship between Dental Caries and Diabetes in Dental Records. Proceedings of the 2016 *International Conference on Health Informatics and Medical Systems (HIMS 2016)*, Las Vegas, NV, USA.
- Alférez, G.H., Rodríguez, J., Clausen, B., & Pompe, L.R. (2015). Interpreting the Geochemistry of Southern California Granitic Rocks Using Machine Learning. Proceedings of the 2015 *International Conference on Artificial Intelligence (ICAI 2015)*, Las Vegas, NV, USA.
- Zabala, B. & Alférez, G.H. (2015). Proactive Control of Traffic in Smart Cities. Proceedings of the 2015 *International Conference on Artificial Intelligence (ICAI 2015)*, Las Vegas, NV, USA.
- Marín, C., Alférez, G.H. Córdova, J., & González, V. (2015). Detection of Melanoma Through Image Recognition and Artificial Neural Networks. Proceedings of the 2015 *IUPESM World Congress on Medical Physics and Biomedical Engineering (WC 2015)*, Toronto, Canada.
- Torres, M., & Alférez, G.H. (2014). Software Architecture Evolution in the Open World through Genetic Algorithms. Proceedings of the 2014 *International Conference on Software Engineering Research and Practice (SERP 2014)*, Las Vegas, NV, USA.
- Alférez, G.H., & Pelechano, V. (2013). Facing Uncertainty in Web Service Compositions. Proceedings of the *IEEE 20th International Conference on Web Services (ICWS 213)*, Santa Clara, CA, USA.
- Alférez, G.H., & Pelechano, V. (2012). Dynamic Evolution of Context-Aware Systems with Models at Runtime. Proceedings of the *ACM/IEEE 15th International Conference on Model Driven Engineering Languages & Systems (MODELS 2012)*, Innsbruck, Austria.
- Ayora, C., Alférez, G.H., Torres, V., Pelechano, V. (2012). Applying CVL to Business Process Variability Management. Proceedings of the *VARY workshop at MODELS 2012*, Innsbruck, Austria.
- Alférez, G.H., & Pelechano, V. (2011). Context-Aware Autonomous Web Services in Software Product Lines. Proceedings of the 15th *International Software Product Line Conference (SPLC'11)*, München, Germany.

- Alférez, G.H., & Pelechano, V. (2011). Systematic Reuse of Web Services through Software Product Line Engineering. Proceedings of the *European Conference on Web Services 2011 (ECOWS'11)*, Lugano, Switzerland.
- Ayora, C., Alférez, G.H., Torres, V., Pelechano, V. (2011). Procesos de Negocio Auto-Adaptables al contexto. Proceedings of the *VII Jornadas de Ciencia e Ingeniería de Servicios (JCIS 2011)*, A Coruña, Spain.
- Alférez, G.H. (2009). Grupos de Investigación Tecnológica en Universidades Adventistas: Educación y Misión. Proceedings of the *39th International Seminar on the Integration of Faith and Learning*, Montemorelos, Mexico.

## Book Chapters

- Pelechano, V., Fons, J., Alférez, G.H., & Gómez, M. (2012). Modelos en tiempo de ejecución. In J. García, et al. (Eds.), *Desarrollo de Software Dirigido por Modelos: Conceptos, Métodos y Herramientas* (pp. 529-551). Madrid, Spain: RA-MA.
- Alférez, G.H., & Alférez, E.M. (2011). An aspect-oriented framework to model non-functional requirements in software product lines of service-oriented architectures. In N. Milanovic (Ed.), *Methodologies for Non-Functional Requirements in Service Oriented Architecture: Requirements Engineering, Model-Driven Development and Security* (pp. 246-267). Hershey, Pennsylvania, USA: IGI Global.

## Technological and Scientific Magazines

- Cruz, E. & Alférez, G.H. (2014). Gestionando procesos de negocios usando BPMN 2.0. *Software Guru*, 46, 32-33.
- Serrano, J.A., Regalado, L.C., Villa, V.F., & Alférez, G.H. (2014). Diagnóstico físico utilizando Google Glass y machine learning. *Software Guru*, 45, 50-51.
- Núñez, R., & Alférez G.H. (2012). Propuesta para el mejoramiento de Adventist Forge (second part). *Revista Unaciencia, Corporación Universitaria Adventista*, 8, 25-33.
- Alférez, G.H., & Avila, P.D. (2010). Documentando en Scrum con Google Wave. *Software Guru*, 27, 18-19.
- Mago, E.R., & Alférez G.H. (2010). El papel de la arquitectura de software en Scrum. *Software Guru*, 30, 38-40.
- Núñez, R., & Alférez G.H. (2011). Propuesta para el mejoramiento de Adventist Forge (first part). *Revista Unaciencia, Corporación Universitaria Adventista*, 6, 26-29.
- Sánchez, R.J., Hernández, J., & Alférez, G.H. (2010). Repositorio de componentes de software para sistemas de la Iglesia Adventista del Séptimo Día. *Revista Unaciencia, Corporación Universitaria Adventista*, 4, 144-152.
- Alférez, G.H., & Alférez, E.M. (2009). Utilización de CLAPACK para resolver sistemas de ecuaciones lineales mediante paralelismo y optimización de memoria. *Revista Unaciencia, Corporación Universitaria Adventista*, 3, 27-33.
- Soto, O.O., & Alférez, G.H. (2009). An architecture proposal for academic software in Adventist universities. *Catalyst, Asia-Pacific International University*, 4(1), 35-44.
- Soto, O.O., & Alférez, G.H. (2009). Scrum, ¿un paradigma de administración de proyectos que cumple lo que promete?. *Software Guru*, 25, 35-37.
- Alférez, G.H. (2008). Measurement of the support in the development stages of an aspect-oriented software product line framework. *Catalyst, Asia-Pacific International University*, 3(1), 14-24.

## Master Thesis Advised

De La Fuente, J. (2012). Herramienta para la Generación y Despliegue de Composiciones de Servicios Web Mediante Modelos BPMN. Máster en Ingeniería del Software, Métodos Formales y Sistemas de la Información. Universitat Politècnica de València, Spain