

Miguel Velez

Publications

Books

- [17] Sven Apel, Don Batory, Christian Kästner, and Gunter Saake. *Feature-Oriented Software Product Lines: Concepts and Implementation*. Berlin/Heidelberg, Germany: Springer-Verlag, 2013.
- [16] Amy Brown and Greg Wilson. *The Architecture of Open Source Applications, Volume II*. The Architecture of Open Source Applications v. 2. Kristian Hermansen, 2012.
- [15] Amy Brown and Greg Wilson. *The Architecture of Open Source Applications, Volume I*. The Architecture of Open Source Applications v. 1. CreativeCommons, 2011.
- [14] Frederick P. Brooks. *The Design of Design: Essays from a Computer Scientist*. 1st edition. Addison-Wesley Professional, 2010.
- [13] Robert Yin. *Case Study Research: Design and Methods*. 4th edition. Applied Social Research Methods. SAGE Publications, 2009.
- [12] Forrest Shull, Janice Singer, and Dag I.K. Sjøberg. *Guide to Advanced Empirical Software Engineering*. Secaucus, NJ, USA: Springer-Verlag New York, Inc., 2007.
- [11] Peter Feiler, Kevin Sullivan, Kurt Wallnau, Richard Gabriel, John Goodenough, Richard Linger, Thomas Longstaff, Rick Kazman, Mark Klein, Linda Northrop, and Douglas Schmidt. *Ultra-Large-Scale Systems: The Software Challenge of the Future*. Software Engineering Institute, Carnegie Mellon University, 2006.
- [10] Ramnivas Laddad. *AspectJ in Action: Practical Aspect-Oriented Programming*. Greenwich, CT, USA: Manning Publications, 2003.
- [9] Paul Clements, Bachmann Felix, Len Bass, David Garlan, James Ivers, Reed Little, Paulo Merson, Robert Nord, and Judith Stafford. *Documenting Software Architectures: Views and Beyond*. Pearson Education, 2002.
- [8] Clemens Szyperski. *Component Software: Beyond Object-Oriented Programming*. 2nd. Boston, MA, USA: Addison-Wesley, 2002.
- [7] Krzysztof Czarnecki and Ulrich Eisenecker. *Generative Programming: Methods, Tools, and Applications*. New York, NY, USA: ACM Press/ Addison-Wesley, 2000.
- [6] Mary Shaw and David Garlan. *Software Architecture: Perspectives on an Emerging Discipline*. Upper Saddle River, NJ, USA: Prentice-Hall, Inc., 1996.
- [5] Herbert A. Simon. *The Sciences of the Artificial (3rd Ed.)* Cambridge, MA, USA: MIT Press, 1996.

- [4] Frederick P. Brooks Jr. *The Mythical Man-Month*. anniversary. Boston, MA, USA: Addison-Wesley, 1995.
- [3] Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides. *Design Patterns: Elements of Reusable Object-oriented Software*. Boston, MA, USA: Addison-Wesley Longman Publishing Co., Inc., 1995.
- [2] Daniel P. Siewiorek, C. Gordon Bell, and Allen Newell. *Computer structures: principles and examples*. McGraw-Hill computer science series. McGraw-Hill, 1987. Chap. 2, Levels and Abstraction.
- [1] Peter Naur and Brian Randell. *Software Engineering: Report of a Conference Sponsored by the NATO Science Committee, Garmisch, Germany, 7-11 Oct. 1968, Brussels, Scientific Affairs Division, NATO*. 1969.

Refereed Journal Articles

- [28] Brad A. Myers, Andrew J. Ko, Thomas D. LaToza, and YoungSeok Yoon. "Programmers Are Users Too: Human-Centered Methods for Improving Programming Tools". In *Computer* 49.7 (July 2016), pp. 44–52.
- [27] Brad A. Myers and Jeffrey Stylos. "Improving API Usability". In *Commun. ACM* 59.6 (May 2016), pp. 62–69.
- [26] Jeffrey M. Barnes, David Garlan, and Bradley Schmerl. "Evolution Styles: Foundations and Models for Software Architecture Evolution". In *Softw. Syst. Model. (SoSyM)* 13.2 (May 2014), pp. 649–678.
- [25] Gordon Bell and Daniel P. Siewiorek. "The Book Computer Structures: Thoughts After 40 Years". In *IEEE Ann. Hist. Comput.* 33.2 (Apr. 2011), pp. 89–95.
- [24] Armstrong Nhlabatsi, Robin Laney, and Bashar Nuseibeh. "Feature Interaction: The Security Threat from within Software Systems". In *Progress in Informatics* 5 (Mar. 2008), pp. 75–89.
- [23] Willemien Visser. "Designing as construction of representations: A dynamic viewpoint in cognitive design research". In *Human–Computer Interaction* 21.1 (Dec. 2006), pp. 103–152.
- [22] Bradley Schmerl, Jonathan Aldrich, David Garlan, Rick Kazman, and Hong Yan. "Discovering Architectures from Running Systems". In *IEEE Trans. Softw. Eng. (TSE)* 32.7 (July 2006), pp. 454–466.
- [21] Nicolas Ducheneaut. "Socialization in an Open Source Software Community: A Socio-Technical Analysis". In *Comput. Supported Coop. Work* 14.4 (Aug. 2005), pp. 323–368.
- [20] Joseph F. Maranzano, Sandra A. Rozsypal, Gus H. Zimmerman, Guy W. Warnken, Patricia E. Wirth, and David M. Weiss. "Architecture Reviews: Practice and Experience". In *IEEE Softw.* 22.2 (Mar. 2005), pp. 34–43.
- [19] David Garlan, Shang-Wen Cheng, An-Cheng Huang, Bradley Schmerl, and Peter Steenkiste. "Rainbow: Architecture-Based Self-Adaptation with Reusable Infrastructure". In *Computer* 37.10 (Oct. 2004), pp. 46–54.
- [18] Audris Mockus, Roy T. Fielding, and James D. Herbsleb. "Two Case Studies of Open Source Software Development: Apache and Mozilla". In *ACM Trans. Softw. Eng. Methodol. (TOSEM)* 11.3 (July 2002), pp. 309–346.
- [17] Gail C. Murphy and David Notkin. "Reengineering with Reflexion Models: A Case Study". In *Computer* 30.8 (Aug. 1997), pp. 29–36.
- [16] David Garlan, Robert Allen, and John Ockerbloom. "Architectural Mismatch: Why Reuse Is So Hard". In *IEEE Softw.* 12.6 (Nov. 1995), pp. 17–26.
- [15] Robert E. Kraut and Lynn A. Streeter. "Coordination in Software Development". In *Commun. ACM* 38.3 (Mar. 1995), pp. 69–81.

- [14] Bill Curtis, Herb Krasner, and Neil Iscoe. "A Field Study of the Software Design Process for Large Systems". In *Commun. ACM* 31.11 (Nov. 1988), pp. 1268–1287.
- [13] Ralph Johnson and Brian Foote. "Designing Reusable Classes". In *Journal of Object-Oriented Programming SIGS* 1.5 (June 1988), pp. 22–35.
- [12] Barry W. Boehm. "A Spiral Model of Software Development and Enhancement". In *Computer* 21.5 (May 1988), pp. 61–72.
- [11] Watts S. Humphrey. "Characterizing the Software Process: A Maturity Framework". In *IEEE Softw.* 5.2 (Mar. 1988), pp. 73–79.
- [10] David Harel. "Statecharts: A Visual Formalism for Complex Systems". In *Sci. Comput. Program.* 8.3 (June 1987), pp. 231–274.
- [9] Frederick P. Brooks Jr. "No Silver Bullet Essence and Accidents of Software Engineering". In *Computer* 20.4 (Apr. 1987), pp. 10–19.
- [8] Mary Shaw. "The impact of abstraction concerns on modern programming languages". In *Proceedings of the IEEE* 68.9 (Apr. 1980), pp. 1119–1130.
- [7] David L. Parnas. "Designing Software for Ease of Extension and Contraction". In *IEEE Trans. Softw. Eng. (TSE)* SE-5.2 (Mar. 1979), pp. 128–138.
- [6] W. A. Wulf, R. L. London, and M. Shaw. "An Introduction to the Construction and Verification of Alphard Programs". In *IEEE Trans. Softw. Eng. (TSE)* 2.4 (July 1976), pp. 253–265.
- [5] Frank DeRemer and Hans Kron. "Programming-in-the-Large Versus Programming-in-the-Small". In *IEEE Trans. Softw. Eng. (TSE)* SE-2.2 (June 1976), pp. 80–86.
- [4] Horst W. J. Rittel and Melvin M. Webber. "Dilemmas in a general theory of planning". In *Policy Sciences* 4.2 (June 1973), pp. 155–169.
- [3] C. A. R. Hoare. "Proof of correctness of data representations". In *Acta Informatica* 1.4 (Dec. 1972), pp. 271–281.
- [2] D. L. Parnas. "On the Criteria to Be Used in Decomposing Systems into Modules". In *Commun. ACM* 15.12 (Dec. 1972), pp. 1053–1058.
- [1] Melvin E Conway. "How do committees invent?" In *Datamation* 14.4 (1968), pp. 28–31.

Refereed Conference Publications

- [43] Lili Wei, Yepang Liu, and Shing-Chi Cheung. "Taming Android Fragmentation: Characterizing and Detecting Compatibility Issues for Android Apps". In *Proc. Int'l Conf. Automated Software Engineering (ASE)*. Singapore, Singapore: ACM, Sept. 2016, pp. 226–237.
- [42] Miguel Velez, Jason Sawin, Alexia Ingerson, and David Chiu. "Improving Bitmap Execution Performance Using Column-Based Metadata". In *The IEEE 4th International Conference on Future Internet of Things and Cloud (FiCloud)*. Vienna, Austria, Aug. 2016. (30% acceptance rate).
- [41] Prasad Kawthekar and Christian Kästner. "Sensitivity Analysis For Building Evolving & Adaptive Robotic Software". In *Proceedings of the IJCAI Workshop on Autonomous Mobile Service Robots (WSR)*. New York, NY, USA, July 2016.
- [40] Bogdan Vasilescu, Kelly Blincoe, Qi Xuan, Casey Casalnuovo, Daniela Damian, Premkumar Devanbu, and Vladimir Filkov. "The Sky is Not the Limit: Multitasking Across GitHub Projects". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Austin, TX, USA: ACM, May 2016, pp. 994–1005.
- [39] Thanhvu Nguyen, Thanhvu Koc, Javran Cheng, Jeffrey S. Foster, and Adam A. Porter. "iGen Dynamic Interaction Inference for Configurable Software". In *Proc. Int'l Symposium Foundations of Software Engineering (FSE)*. Seattle, WA, USA: IEEE Computer Society, Nov. 2016.
- [38] Michael Eichberg, Ben Hermann, Mira Mezini, and Leonid Glanz. "Hidden Truths in Dead Software Paths". In *Proc. Europ. Software Engineering Conf. Foundations of Software Engineering (ESEC/FSE)*. Bergamo, Italy: ACM, Aug. 2015, pp. 474–484.
- [37] Norbert Siegmund, Alexander Grebhahn, Sven Apel, and Christian Kästner. "Performance-influence Models for Highly Configurable Systems". In *Proc. Europ. Software Engineering Conf. Foundations of Software Engineering (ESEC/FSE)*. Bergamo, Italy: ACM, Aug. 2015, pp. 284–294.
- [36] David Garlan. "Software Architecture: A Travelogue". In *Proceedings of the on Future of Software Engineering (FOSE)*. Hyderabad, India: ACM, June 2014, pp. 29–39.
- [35] Norbert Siegmund, Norbert von Rhein, and Sven Apel. "Family-Based Performance Measurement". In *Proc. Int'l Conf. Generative and Component-Based Software Engineering (GCSE)*. Indianapolis, IN, USA: ACM, Oct. 2013, pp. 95–104.
- [34] Ali Niknafs and Daniel M. Berry. "The impact of domain knowledge on the effectiveness of requirements idea generation during requirements elicitation". In *Proc. Int'l Requirements Engineering Conf. (RE)*. Chicago, IL, USA: IEEE Computer Society, Sept. 2012, pp. 181–190.
- [33] Dalal Alrajeh, Jeff Kramer, Axel van Lamsweerde, Alessandra Russo, and Sebastián Uchitel. "Generating Obstacle Conditions for Requirements Completeness". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Zurich, Switzerland: IEEE Press, June 2012, pp. 705–715.

- [32] Michaela Greiler, Arie van Deursen, and Margaret-Anne Storey. "Test Confessions: A Study of Testing Practices for Plug-in Systems". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Zurich, Switzerland: IEEE Press, June 2012, pp. 244–254.
- [31] Abram Hindle, Earl T. Barr, Zhendong Su, Mark Gabel, and Premkumar Devanbu. "On the Naturalness of Software". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Zurich, Switzerland: IEEE Press, June 2012, pp. 837–847.
- [30] David Garlan, Vishal Dwivedi, Ivan Ruchkin, and Bradley Schmerl. "Foundations and Tools for End-user Architecting". In *Proceedings of the Conference on Large-Scale Complex IT Systems: Development, Operation and Management*. Oxford, UK: Springer-Verlag, Mar. 2012, pp. 157–182.
- [29] Laura Dabbish, Colleen Stuart, Jason Tsay, and Jim Herbsleb. "Social Coding in GitHub: Transparency and Collaboration in an Open Software Repository". In *Proc. Conf. Computer Supported Cooperative Work (CSCW)*. Seattle, WA, USA: ACM, Feb. 2012, pp. 1277–1286.
- [28] Zuoning Yin, Ding Yuan, Yuanyuan Zhou, Shankar Pasupathy, and Lakshmi Bairava-sundaram. "How Do Fixes Become Bugs?" In *Proc. Europ. Software Engineering Conf. Foundations of Software Engineering (ESEC/FSE)*. Szeged, Hungary: ACM, Sept. 2011, pp. 26–36.
- [27] Andreas Zeller, Thomas Zimmermann, and Christian Bird. "Failure is a Four-letter Word: A Parody in Empirical Research". In *International Conference on Predictive Models in Software Engineering*. Banff, Canada: ACM, Sept. 2011, 5:1–5:7.
- [26] Joshua Sunshine, Karl Naden, Sven Stork, Jonathan Aldrich, and Éric Tanter. "First-class State Change in Plaid". In *Proc. Int'l Conf. Object-Oriented Programming, Systems, Languages and Applications (OOPSLA)*. Portland, OR, USA: ACM, Oct. 2011, pp. 713–732.
- [25] Ajinkya Bhave, Bruce Krogh, David Garlan, and Bradley Schmerl. "View Consistency in Architectures for Cyber-Physical Systems". In *International Conference on Cyber-Physical Systems (ICCPs)*. Chicago, IL, USA: IEEE Computer Society Press, Apr. 2011, pp. 151–160.
- [24] Neil Maiden, Sara Jones, Kristine Karlsen, Roger Neill, Konstantinos Zachos, and Alastair Milne. "Requirements Engineering As Creative Problem Solving: A Research Agenda for Idea Finding". In *Proc. Int'l Requirements Engineering Conf. (RE)*. Sydney, Australia: IEEE Computer Society, Sept. 2010, pp. 57–66.
- [23] Pete Sawyer, Nelly Bencomo, Jon Whittle, Emmanuel Letier, and Anthony Finkelstein. "Requirements-Aware Systems: A Research Agenda for RE for Self-adaptive Systems". In *Proc. Int'l Requirements Engineering Conf. (RE)*. Sydney, Australia: IEEE Computer Society, Sept. 2010, pp. 95–103.
- [22] Jorge Aranda and Gina Venolia. "The Secret Life of Bugs: Going Past the Errors and Omissions in Software Repositories". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Vancouver, Canada: IEEE Computer Society, May 2009, pp. 298–308.

- [21] Uri Dekel and James D. Herbsleb. "Improving API Documentation Usability with Knowledge Pushing". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Vancouver, Canada: IEEE Computer Society Press, May 2009, pp. 320–330.
- [20] Nachiappan Nagappan, Brendan Murphy, and Victor Basili. "The Influence of Organizational Structure on Software Quality: An Empirical Case Study". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Leipzig, Germany: ACM, May 2008, pp. 521–530.
- [19] Hausi Müller, Mauro Pezzè, and Mary Shaw. "Visibility of Control in Adaptive Systems". In *Proceedings of the International Workshop on Ultra-Large-Scale Software-Intensive Systems (ULSSIS)*. Leipzig, Germany: ACM, May 2008, pp. 23–26.
- [18] Jorge Aranda, Steve Easterbrook, and Greg Wilson. "Requirements in the wild: How small companies do it". In *Proc. Int'l Requirements Engineering Conf. (RE)*. New Delhi, India: IEEE Computer Society, Oct. 2007, pp. 39–48.
- [17] David Garlan and Bradley Schmerl. "Architecture-driven Modelling and Analysis". In *Proceedings on Safety Critical Systems and Software (SCS)*. Melbourne, Australia: Australian Computer Society, Inc., Aug. 2006, pp. 3–17.
- [16] Friedrich Steimann. "The Paradoxical Success of Aspect-oriented Programming". In *Proc. Int'l Conf. Object-Oriented Programming, Systems, Languages and Applications (OOPSLA)*. Portland, OR, USA: ACM, Oct. 2006, pp. 481–497.
- [15] Don Batory, Jacob Neal Sarvela, and Axel Rauschmayer. "Scaling Step-wise Refinement". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Portland, OR, USA: IEEE Computer Society, May 2003, pp. 187–197.
- [14] Mary Shaw. "Writing Good Software Engineering Research Papers: Minitutorial". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Portland, Oregon: IEEE Computer Society, May 2003, pp. 726–736.
- [13] Dieter Fox. "KLD-Sampling: Adaptive Particle Filters". In *Advances in Neural Information Processing Systems 14*. MIT Press, 2001.
- [12] Axel Van Lamsweerde. "Goal-Oriented Requirements Engineering: A Guided Tour". In *Proc. Int'l Requirements Engineering Conf. (RE)*. Toronto, Canada: IEEE Computer Society, Aug. 2001, pp. 249–262.
- [11] Peri Tarr, Harold Ossher, William Harrison, and Stanley M. Sutton Jr. "N Degrees of Separation: Multi-dimensional Separation of Concerns". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Los Angeles, CA, USA: ACM, May 1999, pp. 107–119.
- [10] Luca Cardelli. "Program Fragments, Linking, and Modularization". In *Proc. Symp. Principles of Programming Languages (POPL)*. Paris, France: ACM, Jan. 1997, pp. 266–277.
- [9] Colin Potts and Wendy C. Newstetter. "Naturalistic Inquiry and Requirements Engineering: Reconciling Their Theoretical Foundations". In *Proc. Int'l Requirements Engineering Conf. (RE)*. Annapolis, MD, USA: IEEE Computer Society, Jan. 1997, pp. 118–127.

- [8] Michael Jackson. "The World and the Machine". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Seattle, WA, USA: ACM, Apr. 1995, pp. 283–292.
- [7] Orlena Gotel and Anthony Finkelstein. "Contribution Structures". In *Proc. Int'l Requirements Engineering Conf. (RE)*. York, U.K.: IEEE Computer Society, Mar. 1995, pp. 100–107.
- [6] Ted Biggerstaff. "The Library Scaling Problem and the Limits of Concrete Component Reuse". In *Proc. Int'l Conf. Software Reuse (ICSR)*. Rio de Janeiro, Brazil: IEEE Computer Society, 1994, pp. 102–109.
- [5] Robert Allen and David Garlan. "Formalizing Architectural Connection". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Sorrento, Italy: IEEE Computer Society Press, May 1994, pp. 71–80.
- [4] L. Osterweil. "Software Processes Are Software Too". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Monterey, CA, USA: IEEE Computer Society Press, Mar. 1987, pp. 2–13.
- [3] W. W. Royce. "Managing the Development of Large Software Systems: Concepts and Techniques". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Monterey, CA, USA: IEEE Computer Society Press, Mar. 1987, pp. 328–338.
- [2] Samuel T. Redwine Jr. and William E. Riddle. "Software Technology Maturation". In *Proc. Int'l Conf. Software Engineering (ICSE)*. London, England: IEEE Computer Society Press, Aug. 1985, pp. 189–200.
- [1] D. L. Parnas, P. C. Clements, and D. M. Weiss. "The Modular Structure of Complex Systems". In *Proc. Int'l Conf. Software Engineering (ICSE)*. Orlando, FL, USA: IEEE Press, Mar. 1984, pp. 408–417.

Technical Reports

- [3] Robert E. Filman and Daniel P. Friedman. *Aspect-Oriented Programming is Quantification and Obliviousness*. Technical Report. NASA, 2000.
- [2] Rick Kazman, Mark Klein, and Paul Clements. *ATAM: Method for Architecture Evaluation*. Technical Report CMU/SEI-2000-TR-004. Pittsburgh, PA: Software Engineering Institute, Carnegie Mellon University, 2000.
- [1] David Garlan and Mary Shaw. *An Introduction to Software Architecture*. Technical Report CMU-CS-94-166. CMU, Jan. 1994.

Part of Books

- [1] Mary Shaw. "The Role of Design Spaces". In Marian Petre and André van der Hoek. *Software Designers in Action: A Human-Centric Look at Design Work*. CRC Press, 2013.

Miscellaneous

- [5] Miguel Velez and Jason Sawin. *Improving the Efficiency of CHA through Parallelization*. Poster. Inquiry at St. Thomas. St. Paul, MN, USA, May 2016.
- [4] Miguel Velez and Jason Sawin. *Faster WAH Compression Querying through the Use of Metadata*. Poster. Consortium for Computing Sciences in Colleges Midwest Region. 1st place Discovery Track. Evansville, IN, USA, Oct. 2015.
- [3] Miguel Velez and Armando Solar-Lezama. *Simpler Implementation of Sketches through Enhanced Expressiveness*. Poster. MIT Summer Research Poster Session. Cambridge, MA, USA, Aug. 2015.
- [2] Miguel Velez. *Current and Future Relationships Between Robots and Humans*. Summa Cum Laude Paper. Apr. 2015.
- [1] Miguel Velez, Peter Gittins, and Jason Sawin. *Extending SMILES to Encode Reaction Mechanisms*. Poster. Inquiry at St. Thomas. St. Paul, MN, USA, May 2014.