Andreas M. Stefik, Ph.D.

University of Nevada, Las Vegas
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RESEARCH INTERESTS	Accessibility, Computer Science Education, Programming Languages, Software Engineering.
WORK EXPERIENCE	◇ **Professor**: Department of Computer Science, University of Nevada, Las Vegas (2022 – Present)
	◇ **Associate Professor**: Department of Computer Science, University of Nevada, Las Vegas (2017 – 2022)
	◇ **Assistant Professor**: Department of Computer Science, University of Nevada, Las Vegas (2013 – 2017)
	◇ **Assistant Professor**: Department of Computer Science, Southern Illinois University Edwardsville (2009 – 2013)
	◇ **Lecturer**: Department of Computer Science, Central Washington University (2008 – 2009)
	◇ **Research Assistant**: Department of Electrical Engineering and Computer Science, Washington State University (Spring and Fall Semester, 2007)
	◇ **Teaching Assistant**: Department of Electrical Engineering and Computer Science, Washington State University (Spring and Fall Semester, 2006 and Spring Semester, 2008)
	◇ **Programmer**: Department of Electrical Engineering and Computer Science, Washington State University (Summer, 2006)
EDUCATION	◇ **Ph.D. in Computer Science**, May, 2008. GPA: 3.96 Dissertation title: *On the Design of Program Execution Environments for Non-sighted Computer Programmers.* Washington State University, Pullman, WA. **M.S. in Computer Science**, December 2005. GPA: 4.0 Master's thesis title: *An Empirical Comparison of Program Auralization Techniques.* Washington State University, Pullman, WA.
	◇ **B.S. in Computer Science**, June 2004. GPA: 3.9 **B.A. in Music**, June 2003. GPA: 3.9 Central Washington University, Ellensburg, WA.
AWARDS	◇ Champion of Computer Science - Code.org and CSTA, 2018
	◇ **White House Champion of Change** - U.S. White House. Executive Office of the President, 2016
	◇ Best Researcher Award - UNLV Computer Science, 2015
	◇ 2014 - Best Fringe Presentation - CPA 2014.
	◇ 2012 Outstanding Researcher Award - Southern Illinois University Edwardsville
	◇ **Java Innovation Award (also called the Duke Award) - Oracle Corporation, 2011**
MAJOR GRANTS	◇ Medium RPP, High School Strand: Collaborative Research: AccessCSforAll: Making High School Computer Science Accessible. National Science Foundation. $999,975 (Me: $499,899)) (Awarded 8/16/2021)

⬦ Collaborative Research: Investigating Inclusive Data Science Tools to Overcome Statistics Anxiety. National Science Foundation. $1,301,868 (Me: $628,976)) (Awarded 6/28/2021)

⬦ Collaborative Research: DTI: Toward Data Science for All. National Science Foundation. $1,347,175 (Me: $634,361)) (Awarded 4/1/2021)

⬦ Collaborative Research: AccessCSforAll: Including Students with Disabilities in High School Computer Science. National Science Foundation. $988,929 (Me: $472,458) (Awarded 8/14/2017)

⬦ Co-PI: Perceptual and Implementation Strategies for Knowledge Acquisition of Digital Tactile Graphics for Blind and Visually Impaired Students. National Science Foundation. $916,978 (Me, $218,588)

⬦ Co-PI: Research Supporting Multisensory Engagement by Blind, Visually Impaired, and Sighted Students to Advance Integrated Learning of Astronomy and Computer Science. National Science Foundation.$2,499,187 (Me, $244,528)

⬦ NSF CE-21 CNS-1440878. Richard Ladner and Andreas Stefik, Collaborative Research: AccessCS10K: Including Students with Disabilities in Computing Education for the Twenty-First Century. National Science Foundation. $999,996 (Me $474,695)

⬦ NSF CNS-0940521, Andreas Stefik and Christopher Hundhausen, *Collaborative Research: BPC-DP: Building an Educational Infrastructure for Students at K-12 Schools for the Blind to Broaden Participation in Computing*, 2009. National Science Foundation. $592,920 (Me, $409,056)

Minor Grants

⬦ CRRSAA Funding, $111,012

⬦ PI: Supplement to Collaborative Research: AccessCSforAll: Including Students with Disabilities in High School Computer Science, $93,835

⬦ PI: Supplement to Collaborative Research: CS 10K: AccessCS10K: Including Students with Disabilities in Computing Education for the Twenty-First Century: $94,939

⬦ REU supplements to existing NSF grants ($147,917 in total).

⬦ DDGRA and TTDGRA grants to support Ph.D. Students (3-year stipends each)

⬦ Pacific Foundation for the Blind. LEGO Robotics in the Quorum programming language (2015). Funded: $5,400

⬦ Access Computing Grant, Andreas Stefik, 2011. Funded: $5,000.

⬦ S.T.E.P Grant, Andreas Stefik, *What is the Effect of Blindness on the Ability to use an Auditory Computer Programming Environment? An Empirical Study*, 2009. Funded: $11,212.

⬦ URCA (Undergraduates involved in Research or Creative activities). This regular award allows me to support additional undergraduate students in research activities. Funded Spring 2010: $800, Funded Spring 2011: $800, Funded Fall 2011: $1000.

Journal Publications (Reviewed)

⬦ Patrick Daleiden, Andreas Stefik, P. Merlin Uesbeck, and Jan Pedersen. 2020. Analysis of a Randomized Controlled Trial of Student Performance in Parallel Programming using a New Measurement Technique. ACM Trans. Comput. Educ. 20, 3, Article 21 (September 2020), 28 pages. DOI:https://doi.org/10.1145/3401892

⬦ Patrick Daleiden, Andreas Stefik, and Philip Merlin Uesbeck. 2020. GPU Programming Productivity in Different Abstraction Paradigms: A Randomized Controlled Trial Comparing CUDA and Thrust. ACM Trans. Comput. Educ. 20, 4, Article 27 (November 2020), 27 pages. DOI:https://doi.org/10.1145/3418301

⬦ Jennifer L. Tennison, P. Merlin Uesbeck, Nicholas A. Giudice, Andreas Stefik, Derrick W. Smith, and Jenna L. Gorlewicz. 2020. Establishing Vibration-Based Tactile Line Profiles for Use in Multimodal Graphics. ACM Trans. Appl. Percept. 17, 2, Article 7 (May 2020), 14 pages. DOI:https://doi.org/10.1145/3383457

⬦ Jenna L. Gorlewicz, Jennifer L. Tennison, P. Merlin Uesbeck, Margaret E. Richard, Hari P. Palani, Andreas Stefik, Derrick W. Smith, and Nicholas A. Giudice. 2020. Design Guidelines and Recommendations for Multimodal, Touchscreen-based Graphics. ACM Trans. Access. Comput. 13, 3, Article 10 (August 2020), 30 pages. DOI:https://doi.org/10.1145/3403933

⬦ In Defense of Programming Language Research (Author response) A Stefik, S Hanenberg COMPUTER 51 (4), 6-7, 2018

⬦ Andreas Stefik, Stefan Hanenberg, Methodological Irregularities in ProgrammingLanguage Research. IEEE Computer, 2017

⬦ Richard E. Ladner, Andreas Stefik, AccessCSforall: making computer science accessible to K-12 students in the United States. ACM SIGACCESS Accessibility and Computing, 2017

⬦ Crk, I., Kluthe, T., & Stefik, A. M. (2016). Understanding programming expertise: an empirical study of phasic brain wave changes. ACM Transactions on Computer-Human Interaction (TOCHI). 23 (1), 2.

⬦ Varnell-Sarjeant, J., Andrews, A. A., Lucente, J., & Stefik, A. M. (2015). Comparing development approaches and reuse strategies: An empirical evaluation of developer views from the aerospace industry. Information and Software Technology. 61, 71–92.

⬦ Hanenberg, S., Kleinschmager, S., Robbes, R., Tanter, E., & Stefik, A. M. (2014). An empirical study on the impact of static typing on software maintainability. Empirical Software Engineering. 19 (5), 1335–1382.

⬦ Runeson, P., Stefik, A. M., & Andrews, A. (2014). Variation factors in the design and analysis of replicated controlled experiments. Empirical Software Engineering. 19 (6), 1781–1808.

⬦ Stefik, A. M., & Siebert, S. (2013). An empirical investigation into programming language syntax. ACM Transactions on Computing Education (TOCE). 13 (4), 19.

⬦ Stefik, A. M., Hundhausen, C., & Patterson, R. (2011). An Empirical Investigation into the Design of Auditory Cues to Enhance Computer Program Comprehension. The International Journal of Human-Computer Studies. 69, 820-838.

⬦ Stefik, A. M., & Gellenbeck, E. (2011). Empirical studies on programming language stimuli. Software Quality Journal. 19 (1), 65–99.

⬦ Alexander, R. T., Offutt, J., & Stefik, A. M. (2010). Testing coupling relationships in object-oriented programs. Software Testing, Verification and Reliability. 20 (4), 291–327.

⬦ Patterson, R., Tripp, L., Rogers, J. A., Boydstun, A. S., & Stefik, A. M. (2009). Modeling the simulated real-world optic flow motion aftereffect. JOSA A. 26 (5), 1202–1211.

⬦ Stefik, A. M., Stefik, M., & Curtiss, M. (2007). An automatic translator for semantically encoded musical languages. Computer Music Journal. 31 (4), 33–46.

BOOK
CHAPTERS

⬦ Gutierrez, A. P., Schraw, G., & Stefik, A. M. (2015). Design Principles for Visual Displays: Past, Present and Future. Information Age Publishing.

CONFERENCE
PUBLICATIONS
(REVIEWED)

⬦ Daniel D. Garcia, Michael P. Rogers, and Andreas Stefik. 2021. Fun and Engaging Pre-CS1 Programming Languages. In Proceedings of the 52nd ACM Technical Symposium on Computer Science Education (SIGCSE '21). Association for Computing Machinery, New York, NY, USA, 760-761.

⬦ Andrea Danyluk, Paul Leidig, Andrew McGettrick, Lillian Cassel, Maureen Doyle, Christian Servin, Karl Schmitt, and Andreas Stefik. 2021. Computing Competencies for Undergraduate Data Science Programs: an ACM Task Force Final Report. In Proceedings of the 52nd ACM Technical Symposium on Computer Science Education (SIGCSE '21). Association for Computing Machinery, New York, NY, USA, 1119-1120. DOI:https://doi.org/10.1145/3408877.3432586

◇ P. Merlin Uesbeck, Cole S. Peterson, Bonita Sharif, and Andreas Stefik. 2020. A randomized controlled trial on the effects of embedded computer language switching. Proceedings of the 28th ACM Joint Meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering. Association for Computing Machinery, New York, NY, USA, 410-420. DOI:https://doi.org/10.1145/3368089.3409701

◇ R. E. Ladner, A. Stefik, J. Naumann and E. Peach, 'Computer Science Principles for Teachers of Deaf Students,' 2020 Research on Equity and Sustained Participation in Engineering, Computing, and Technology (RESPECT), Portland, OR, 2020, pp. 1-4, doi: 10.1109/RE-SPECT49803.2020.9272432.

◇ A Randomized Controlled Trial on the Wild Wild West of Scientific Computing with Student Learners, Timothy Rafalski, P. Merlin Uesbeck, Cristina Panks-Meloney, Patrick Daleiden, William Allee, Amelia Mcnamara, Andreas Stefik, ICER 19, August 12?14, 2019, Toronto, ON, Canada

◇ (Best Paper Award) Computer Science Principles for Teachers of Blind and Visually Impaired Students, Andreas Stefik, Richard Ladner, William Allee, Sean Mealin. SIGCSE 2019

◇ Uesbeck, M., Stefik A.M. A Randomized Controlled Trial on the Impact of Polyglot Programming in a Database Context. 9th Workshop on Evaluation and Usability of Programming Languages and Tools (PLATEAU 2018). Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik, Volume 67, 2019.

◇ Andreas Stefik and Bonita Sharif and Brad. A. Myers and Stefan Hanenberg. Evidence About Programmers for Programming Language Design (Dagstuhl Seminar 18061). Dagstuhl Reports. 1–25. Dagstuhl, Germany. 2018

◇ Uesbeck, P. M., Stefik, A. M., Hanenberg, S., Pedersen, J. B., & Daleiden, P. (2016). An empirical study on the impact of C++ lambdas and programmer experience. Proceedings of the 38th International Conference on Software Engineering (pp. 760–771). IEEE.

◇ Myers, B. A., Stefik, A. M., Hanenberg, S., Kaijanaho, A.-J., Burnett, M., Turbak, F., & Wadler, P. (2016). Usability of Programming Languages: Special Interest Group (SIG) Meeting at CHI 2016. Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems (pp. 1104–1107).

◇ Stefik, A. M., & Ladner, R. E. (2015). Introduction to AccessCS10K and accessible tools for teaching programming. Proceedings of the 46th ACM Technical Symposium on Computer Science Education (pp. 518–519).

◇ Hanenberg, S., & Stefik, A. M. (2015). On the need to define community agreements for controlled experiments with human subjects: a discussion paper. Proceedings of the 6th Workshop on Evaluation and Usability of Programming Languages and Tools (pp. 61–67).

◇ Varnell-Sarjeant, J., Andrews, A. A., & Stefik, A. M. (2014). Comparing reuse strategies: an empirical evaluation of developer views. Computer Software and Applications Conference Workshops (COMPSACW), 2014 IEEE 38th International (pp. 498–503).

◇ Endrikat, S., Hanenberg, S., Robbes, R., & Stefik, A. M. (2014). How do api documentation and static typing affect api usability? Proceedings of the 36th International Conference on Software Engineering (pp. 632–642).

◇ Stefik, A. M., & Hanenberg, S. (2014). The programming language wars: Questions and responsibilities for the programming language community. Proceedings of the 2014 ACM International Symposium on New Ideas, New Paradigms, and Reflections on Programming & Software (pp. 283–299).

◇ Pedersen, J. B., & Stefik, A. M. (2014). Towards Millions of Processes on the JVM. Proceedings of Communicating Process Architectures (CPA'14).

◇ Stefik, A. M., Hanenberg, S., McKenney, M., Andrews, A., Yellanki, S. K., & Siebert, S. (2014). What is the foundation of evidence of human factors decisions in language design? an

empirical study on programming language workshops. Proceedings of the 22nd International Conference on Program Comprehension (pp. 223–231).

◇ Mayer, C., Hanenberg, S., Robbes, R., Tanter, E., & Stefik, A. M. (2012). An empirical study of the influence of static type systems on the usability of undocumented software. ACM SIGPLAN Notices (pp. 683–702).

◇ Kleinschmager, S., Robbes, R., Stefik, A. M., Hanenberg, S., & Tanter, E. (2012). Do static type systems improve the maintainability of software systems? An empirical study. Program Comprehension (ICPC), 2012 IEEE 20th International Conference on (pp. 153–162).

◇ Runeson, P., Stefik, A. M., Andrews, A., Gronblom, S., Porres, I., & Siebert, S. (2011). A comparative analysis of three replicated experiments comparing inspection and unit testing. Replication in Empirical Software Engineering Research (RESER), 2011 Second International Workshop on (pp. 35–42).

◇ Stefik, A. M., Siebert, S., Stefik, M., & Slattery, K. (2011). An Empirical Comparison of the Accuracy Rates of Novices using the Quorum, Perl, and Randomo Programming Languages. Workshop on the Evaluation and Usability of Programming Languages and Tools (PLATEAU 2011).

◇ Stefik, A. M., Hundhausen, C., & Smith, D. (2011). On the design of an educational infrastructure for the blind and visually impaired in computer science. Proceedings of the 42nd ACM technical symposium on Computer science education (pp. 571–576).

◇ Stefik, A. M., Siebert, S., Slattery, K., & Stefik, M. (2011). Toward intuitive programming languages. Program Comprehension (ICPC), 2011 IEEE 19th International Conference on (pp. 213–214).

◇ Gellenbeck, E., & Stefik, A. M. (2009). Evaluating prosodic cues as a means to disambiguate algebraic expressions: an empirical study. Proceedings of the 11th international ACM SIGACCESS conference on Computers and accessibility (pp. 139–146).

◇ Stefik, A. M., Haywood, A., Mansoor, S., Dunda, B., & Garcia, D. (2009). Sodbeans. Program Comprehension, 2009. ICPC?09. IEEE 17th International Conference on (pp. 293–294).

◇ Stefik, A. M., & Gellenbeck, E. (2009). Using spoken text to aid debugging: An empirical study. Program Comprehension, 2009. ICPC?09. IEEE 17th International Conference on (pp. 110–119).

◇ Stefik, A. M., Alexander, R., Patterson, R., & Brown, J. (2007). WAD: A feasibility study using the wicked audio debugger. 15th IEEE International Conference on Program Comprehension (ICPC?07) (pp. 69–80).

◇ Stefik, A. M., Fitz, K., & Alexander, R. T. (2006). Increasing Fault Detection Effectiveness Using Layered Program Auralization. Software engineering research and practice (pp. 959–965).

◇ Stefik, A. M., Fitz, K., & Alexander, R. (2006). Layered program auralization: Using music to increase runtime program comprehension and debugging effectiveness. 14th IEEE International Conference on Program Comprehension (ICPC?06) (pp. 89–93).

◇ Andrews, A. A., Stefik, A. M., Picone, N., & Ghosh, S. (2005). A COTS component comprehension process. 13th International Workshop on Program Comprehension (IWPC?05) (pp. 135–144).

Peer Reviewed Abstracts

◇ Richard E. Ladner, Andreas Stefik, Amy J. Ko, and Brianna Blaser. 2020. Access to Computing Education for Students with Disabilities. In Proceedings of the 51st ACM Technical Symposium on Computer Science Education (SIGCSE 2020). Association for Computing Machinery, New York, NY, USA, 1403. DOI:https://doi.org/10.1145/3328778.3372514

◇ Spuck, T.; Hammerman, J.; Meredith, K.; Reichart, D.; Stefik, A.; Catricheo, Y.; Gasca, S.; Grossi, A.; Gustavson, K.; Haislip, J.; Hochberg, E.; Linder, T.; Feranchak, B. Research

Supporting Multisensory Engagement by BVI and Sighted Students to Advance Integrated Learning of Astronomy and Computer Science. American Astronomical Society meeting #235, id. 135.04. Bulletin of the American Astronomical Society, Vol. 52, No. 1, 2020

⋄ Wagner, A., Gray, J., Marghitu, D., & Stefik, A. M. (2016). Raising the Awareness of Accessibility Needs in Block Languages., 497–497.

⋄ Ladner, R. E., Blaser, B., Stefik, A. M., & Marghitu, D. (2016). Universal access to computing education., 701–701.

⋄ Ladner, R., Alkoby, K., Bigham, J., Ludi, S., Marghitu, D., & Stefik, A. M. (2012). Improving the accessibility of computing enrichment programs., 662–662.

⋄ Patterson, R., Rogers, J., Boydstun, A., Tripp, L., & Stefik, A. M. (2008). System dynamics modeling of the optic flow motion aftereffect. Journal of Vision. 8 (6), 1035–1035.

OTHER PUBLICATIONS

⋄ Andrea Danyluk, Paul Leidig, Scott Buck, Lillian Cassel, Maureen Doyle, Tin Kam Ho, Andrew McGettrick, Suzanne McIntosh, Weining Qian, Karl Schmitt, Christian Servin, Andreas Stefik, Hongzhi Wang, Jason Wittenbach (2021), Computing Competencies for Undergraduate Data Science Curricula. ACM Data Science Task Force. ACM. Available from https://dstf.acm.org/

⋄ Stefik, A. M. (2008). On the design of program execution environments for non-sighted computer programmers. Ph.D. Dissertation. Washington State University.

⋄ Stefik, A. M. (2005). An empirical comparison of program auralization techniques. M.S. thesis. Washington State University.

TEACHING EXPERIENCE

⋄ **Assistant/Associate Professor**: University of Nevada, Las Vegas (2013 – present): Software Engineering (Fall 2013 - 2021), Software Engineering 2 (Spring 2015, 2016), Computer Science 2 (Spring 2014), Graduate Empirical Software Engineering (called Software Architecture, Ph.D. level course) (Spring 2017, 2018, 2020), Principles of Programming Languages (2019, 2021).

⋄ **Assistant Professor**: Southern Illinois University Edwardsville (2009 – 2013): Empirical Software Engineering (Graduate, Spring 2010), Human-Computer Interaction (Fall 2009, Spring 2010, Fall 2010), Principles of Programming (Fall 2010, Spring 2010), Compiler Theory (Graduate/Undergraduate, Fall 2011), Senior Projects 1 (Spring 2011) and 2 (Fall 2011).

⋄ **Instructor**: Central Washington University (2008 – 2009): Principles of Programming Languages 1 (Fall 2008) and 2 (Winter 2009), Software Engineering 1 (Fall 2008) and 2 (Winter 2009), ALICE/Robotics (Winter 2009), Assembly (Fall 2008, Spring 2009), Design Patterns (Winter 2009), Compiler theory (Spring 2009), Database theory (Spring 2009)

⋄ **Teaching Assistant**: Washington State University(2006, 2008): Human Computer Interaction (Spring 2008), Graphics Programming in OpenGL (Fall 2006), Advanced Data Structures (Spring 2006), Data Structures (Spring 2006 and Spring 2008).

MENTORSHIP

⋄ **Graduate Students**: M.S. Neelima Samsani (2009 - 2010) (Graduated), M.S. Susanna Kiwalla (2009 - 2011) (Graduated), M.S. Patrick Daleiden (2014 - 2016) (Graduated) Ph.D. Graduation 2020 (Funded), M.S. Phillip Uesbeck (2014 - 2016) (Graduated) Ph.D. Graduation 2019 (Funded), M.S./Ph.D. Tim Rafalski (expected graduation 2020-2022) (Funded), M.S. William Allee (expected graduation 2019-2020) (Funded), Tim Kluthe (Ph.D. Graduation Expected 2023), Hannah Williams (Ph.D. Graduation Expected 2024)

⋄ **Funded Undergraduate Students**: Cristina Panks, Xinke Cao, Matthew Gordin, Jack MacKey, Rolly Lacap, Jack MacKey, Gail Guerrero, Matt Raybuck, Evan Pierzina, Amanda Austin, Reiley Porter, Kim Slattery, Jeff Wilson, Matt Lawson, Ryan Vlazny, Matt Garber, Gabriel Contreras, Trixi Jansuy, Yuria Mann, Hannah Williams.

OTHER HONORS	◇ NetBeans Dream Team Member, Frank Harold Fellowship and Saupe Excellence Award (2005 – 2007), Computer Science Outstanding Graduate (2005 and 2008), Hilton Hotels International Scholarship (2000 – 2003)

SERVICE
- ◇ Reviewer: International Conference on Education Research
- ◇ Chair, ERA Track International Conference on Program Comprehension
- ◇ Associate Editor: Transactions on Computing Education
- ◇ Reviewer: Transactions on Software Engineering
- ◇ Reviewer: The Computer Music Journal
- ◇ Reviewer: Computer Science Education
- ◇ Reviewer: Software Testing, Verification, and Reliability
- ◇ Reviewer: IEEE symposium on Visual Languages and Human-Centric Computing.
- ◇ Program Committee: ACM SIGACCESS
- ◇ Program Committee: International Conference on Educational Research
- ◇ Reviewer: National Science Foundation
- ◇ Statistical Consultant: Journal of Information Science and Technology
- ◇ Program Committee: International Conference on Program Comprehension
- ◇ Organizing Committee: Evaluation of Software Composition Techniques
- ◇ Reviewer: Computer Human Interaction
- ◇ Reviewer: Programming Language Design and Implementation
- ◇ Leading multiple student organizations (e.g., ACM programming competition coach, World usability day).

ALBUMS
- ◇ **Ben Johnston String Quartets Nos. 1, 5, and 10.** (2011) http://www.keplerquartet.com/
- ◇ **Ben Johnston String Quartets Nos. 2, 3, 4, and 9.** (2006) http://www.keplerquartet.com/

I have been working with the Kepler Quartet hand translating complex scores by Ben Johnston into mathematically equivalent, but simpler, versions. This work eventually lead to automatic musical language translation software, a journal publication on the techniques, and two musical albums performed by the Kepler Quartet.