

John Hastings

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SUMMARY

- Accomplished software engineer, researcher, mentor, and creative problem solver with experience in a wide variety of languages including 35+ years in various functional and object-oriented languages.
- Excellent team player which has resulted in award winning collaborative research in AI/ML and CS education with over 25 peer-reviewed scientific publications & presentations.
- NLP research experience under Dr. Stanley Petrick, one of the early giants of computational linguistics and inventor of Petrick's method. This research produced a natural language speech recognition database query system which converts from natural language to database queries (SQL).
- Experience with LLMs, prompt engineering & deep learning.
- Easy going personality & articulate with experience presenting technical ideas and solutions to peers & students.
- Creative, big picture thinker who has produced a variety of novel research ideas (e.g., machine learning techniques: approximate model-based adaptation & automatic case elicitation), and upon whom colleagues turn for project ideas.
- Experience developing, publishing and maintaining large AI/ML systems including:
 - [CARMA](#), an award winning AI/ML system, written in Lisp and Java, which was refactored, extended and maintained over a number of years.
 - Systems to automate processes within the insurance industry (including analysis of personal auto insurance applicants) based on customer/client needs.
- 25+ years teaching automata and formal languages, and 20+ years teaching programming languages (using functional programming to develop new languages and interpreters using Scheme/Racket).

EXPERIENCE

Professor Computer Science, University of Nebraska *Kearney, NE* Aug 2001 - present

- Developed & taught a variety of highly effective, engaging & hands-on core CS courses including: programming languages, data structures & analysis of algorithms (Java), software engineering, automata & formal languages, enterprise application development, discrete structures, computer graphics, mobile app development, artificial intelligence, & operating systems. Consistently high teaching evaluations in even the most difficult courses.
- Introduced approaches to maximize student retention and success including active learning, student-led projects, & developed software as necessary including several CS gamification frameworks (in Java) such as [ZORQ](#). These successful approaches were subsequently adopted by colleagues. Further details about the gamification efforts can be found in the FIE-22 and HICSS-56 publications.
- Built up the curriculum to fill in gaps, mentored students and helped them on the path to employment or grad school, maintained connections with students, and interfaced with alums and industry contacts to bring industry perspectives to students to help illustrate the connection between theory and practice (and to give students ideas and confidence about future opportunities).
- Engaged in outreach & service activities including ACM programming competitions, CoderDojo, & Code.org.

Researcher AI, Machine Learning, 21st Century Systems *McCook, NE* Aug 2009 - Dec 2009

- Researched potential AI/ML solutions for defense contract work.

Software Engineer, AI (contract), USDA-APHIS Jan 2007 - Dec 2009

- Expanded AI system CARMA to Colorado, Idaho, Montana, New Mexico, North Dakota, Oregon, & Utah (final release CARMA 5.051, Jan 2010).

Software Engineer, AI (contract), USDA-APHIS

Jan 2003 - Dec 2005

- Reworked AI system CARMA, originally created in Franz Lisp, to integrate the Lisp AI reasoner with a Java front-end using Armed Bear Common Lisp. Added a cropland module (released as CARMA 4.0, Jan 2004), and expanded the system to Nebraska & South Dakota (released as CARMA 5.045, Jan 2006).

Assistant Professor Computer Science, Dakota State University *Madison, SD*

Aug 2000 - May 2001

- Conducted research and taught a variety of courses including C programming and Assembly Language

Consultant Artificial Intelligence, Berkley Information Services *Sioux Falls, SD*

May 1999 - May 2001

- Designed and implemented systems to automate processes (AI) within the insurance industry. Screened potential new hires and trained.

Assistant Professor Computer Science, South Dakota State University *Brookings, SD*

Aug 1998 - May 2000

- Conducted research & taught a variety of courses including C, Automata Theory & Theory of Computation.

Software Engineer Artificial Intelligence, Berkley Information Services *Luverne, MN*

Feb 1997 - Aug 1998

- Designed and implemented systems to automate processes (AI) within the insurance industry. Researched potential technologies.

EDUCATION

PhD, Computer Science, University of Wyoming

1996

M.S., Computer Science, University of Wyoming

1991

B.S., Computer Science, Phi Beta Kappa, University of Wyoming

1989

SKILLS

- Strong technical research writing skills including a best paper award.
- Experience using agile/devops methodologies to manage & deploy team projects that fulfill requirements.
- Quickly master new skills. Experience with a wide variety of additional areas and technologies including: Lisp, Java, Racket/Scheme, C++, C, Python, JavaScript, Smalltalk, Linux, Microservices, Unit testing, Git, Cloud computing, SQL, JDBC, SQLite, MongoDB, Html, Automated theorem proving, Latex, Emacs, OpenAI, GPT, Assembly language, Deep learning (jupyter, fastai, pytorch, numpy, matplotlib, pandas, hugging face, kaggle, streamlit, gradio), heroku (instead of AWS).

AWARDS

- International IPM (Integrated Pest Management) Award for Excellence Mar 2012
- Best Paper Award, 42nd Hawaii International Conference on System Sciences Jan 2009
- Faculty Mentoring of Undergraduate Student Research Award, University of Nebraska April 2004
- Innovative Applications of Artificial Intelligence (IAAI) award Aug 2001

SELECT PUBLICATIONS

- Sherri Weitzl Harms, Adam Spanier, Matthew Rokusek, John D. Hastings. Assessing User Experiences with ZORQ: A Gamification Framework for Computer Science Education, *56th Hawaii International Conference on System Sciences, (HICSS-56)*, Maui, Hawaii, USA, January 3-6, 2023.
- John Hastings, Sherri Weitzl-Harms, Adam Spanier, Matthew Rokusek & Ryan Henszey, ZORQ: A Gamification Framework for Computer Science Education, *Proceedings of the IEEE 2022 Frontiers in Education Conference (FIE-22)*, IEEE Computer Society.
- Adam Spanier, Sherri Weitzl Harms & John Hastings, A Classification Scheme for Gamification in Computer Science Education: Discovery of Foundational Gamification Genres in Data Structures Courses, *Proceedings of the 2021 Frontiers in Education Conference (FIE-21)*, IEEE Computer Society.

- Sherri Harms & John Hastings, A cross-curricular approach to fostering innovation such as virtual reality development through student-led projects, *Proceedings of the 2016 IEEE Frontiers in Education Conference (FIE-16)*, IEEE Computer Society.
- John D. Hastings, Alexandre V. Latchininsky, Tyler Adelung & Scott P. Schell, Early Assessment of an Approach to Determining the Predictive Coverage of Case-Based Reasoning with Adaptation through CARMA, *Proceedings of the 47th Hawaii International Conference on System Sciences (HICSS-47)*, 2014, IEEE Computer Society.
- John D. Hastings, Alexandre V. Latchininsky & Scott P. Schell, CARMA: Scalability with Approximate-Model-Based Adaptation, *Proceedings of the 2010 International Congress on Environmental Modelling and Software: Modelling for Environment's Sake (iEMSs-2010)*, Ottawa, Canada, July 5–8, 2010.
- John D. Hastings, Anatole Mirasano, Alexandre V. Latchininsky & Scott P. Schell, CARMA: Assessing Usability through a Non-biased Online Survey Technique, *Proceedings of the 43rd Hawaii International Conference on System Sciences (HICSS-43)*, 2010, IEEE Computer Society.
- John D. Hastings & Alexandre V. Latchininsky, CARMA: Platform Freedom for a Graphical Lisp Application through Armed Bear Common Lisp, *Proceedings of the 2009 International Lisp Conference (ILC 2009)*, Cambridge, MA, March 22–25, 2009, ACM.
- John D. Hastings, Alexandre V. Latchininsky & Scott P. Schell, Sustainability of Grasshopper Management and Support through CARMA, *Proceedings of the 42nd Hawaii International Conference on System Sciences (HICSS-42)*, 2009, IEEE Computer Society (Best Paper Award).
- Jay H. Powell & John D. Hastings, An Empirical Evaluation of Automated Knowledge Discovery in a Complex Domain, 21st National Conference on Artificial Intelligence (AAAI–2006), AAAI Press.
 - In *Heuristic Search, Memory-Based Heuristics and Their Applications: AAAI Workshop* (WS–06–08).
 - In *Learning for Search: AAAI Workshop* (WS–06–11).
- Siva N. Kommuri, Jay H. Powell & John D. Hastings, On the Effectiveness of Automatic Case Elicitation in a More Complex Domain, *Proceedings of the Workshop on Computer Gaming and Simulation Environments*, Sixth International Conference on Case-based Reasoning (ICCB–05), Chicago, Illinois, August 23–26, 2005.
- Jay H. Powell, Brandon M. Hauff & John D. Hastings, An Empirical Evaluation of Automatic Case Elicitation, *Proceedings of the Sixth International Conference on Case-based Reasoning (ICCB–05)*, *Lecture Notes in Artificial Intelligence 3620*, Springer.
- Jay H. Powell, Brandon M. Hauff & John D. Hastings, Utilizing Case-Based Reasoning and Automatic Case Elicitation to Develop a Self-Taught Knowledgeable Agent, *Challenges in Game Artificial Intelligence: Papers from the AAAI Workshop* (WS–04–04), 19th National Conference on Artificial Intelligence (AAAI–2004), AAAI Press.
- John Hastings, Karl Branting, Jeffrey Lockwood & Scott Schell, CARMA+: A General Architecture for Pest Management, *Proceedings of the Workshop on Environmental Decision Support Systems*, 18th International Joint Conference on Artificial Intelligence (IJCAI–2003), Acapulco, Mexico, August 9–15, 2003.
- John Hastings, Karl Branting & Jeffrey Lockwood, CARMA: A Case-Based Rangeland Management Advisor, *AI Magazine*, 23(2):49–62 (2002).
- Karl Branting, John Hastings & Jeffrey Lockwood, CARMA: A Case-Based Range Management Advisor, *Proceedings of the 13th Innovative Applications of Artificial Intelligence Conference (IAAI–2001)*, AAAI Press.