

Patrick E. Carlson

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Education

Iowa State University

Ames, Iowa

PhD, Cumulative GPA: 3.68/4.0

2008 - 2015

Major: Human-Computer Interaction (HCI)

Simpson College

Indianola, Iowa

Bachelor of Arts, cum laude, Cumulative GPA: 3.715/4.0

2003 - 2008

Majors: Computer Science and Psychology

Experience

Sandia National Labs

Albuquerque, New Mexico

Data Scientist (promoted to Principal level - May 2021)

2017 - present

Data analysis, R and Python programming, data virtualization, Tableau and Shiny visualizations, analytics team co-lead, SQL and Mongo querying, architecture and data engineering research, project planning, writeups, design mockups, and UX reviews.

Renaissance Learning

Wisconsin Rapids, Wisconsin

User Experience Analyst

2016 - 2017

Perform remote usability testing on software prototypes, help with UI design, and develop and analyze survey data.

Iowa State University

Ames, Iowa

Improving Open Source Software Development (Dissertation Topic)

2010 - 2015

Apply data mining in the development of algorithms and tools to improve developer understanding of technical and social structure in large Open Source communities. Under direction of Dr. Judy Vance.

Bimanual Haptics for Virtual Assembly Tasks (Research Assistant)

2009 - 2015

Designed and analyzed studies examining various bimanual haptic device configurations and learning transfer for virtual assembly tasks. Under direction of Dr. Judy Vance.

Mentor/Support Research Experience for Undergraduate (REU) Students

Summer 2010

Helped coordinate three undergraduate REU students whose project entailed creating a physical mockup of a shopping cart which was then used in a virtual reality user study. Under direction of Dr. Judy Vance.

University of New Mexico

Albuquerque, New Mexico

Research Experience for Undergraduates (REU)

Spring 2006 - Fall 2007

Learned the basics of machine learning and worked on applying this to improving the routing of packets in a dynamic network. Under direction of Dr. Terran Lane.

Simpson College

Indianola, Iowa

Usability and Appeal of the Linux Desktop (Psychology Capstone)

Spring 2007 - Fall 2008

Constructed and performed an experiment empirically contrasting usability and appeal of a 2D versus 3D Linux desktop.

Origins of Human Cooperation and Altruism

Fall 2005 - Fall 2006

Simulated the evolution of cooperation/altruism using game theory techniques and genetic algorithms.

Presented work at Argonne National Laboratory.

Teaching and Other

Engineering/LAS Online Learning (Graduate Assistant)

Fall 2014

ME/WLC 484/584: Technology, Globalization, and Culture (Teaching Assistant)

Fall 2013

HCI/Psych 522: Scientific Methods in HCI (Teaching Assistant)

Spring 2013

CS 309: Software Development Practices (Teaching Assistant)

Spring 2009

CS 207: Programming I (Teaching Assistant)

Fall 2008

Groups and Activities

Sandia Data Sciences - Community of Practice Organizer

2018 - Present

Iowa State University Badminton Club

2009 - 2015

ISU Human-Computer Interaction Student Group Vice President

2010 - 2011

Simpson College Math Club

2006 - 2008

Simpson College Computer Club

2003 - 2008

Honors

Iowa State University Research Excellence Award

Spring 2015

Outstanding Senior in Computer Science (Simpson College)

May 2008

Honorable Mention in the Mathematical Contest in Modeling (MCM)

2006, 2007, 2008

Psi Chi National Honor Society in Psychology

March 2007

Recent Poster Presentations

Carlson, Patrick & Vance, Judy M. (2013, April). [Who Should I Contact?: Helping New Developers Find Experts](#). Poster presented at the Emerging Technologies Conference, Ames, IA. **Awarded most interesting research project.**

Peters, Anicia & Carlson, Patrick & Gilbert, Stephen & Vance, Judy M. (2012, April). [A Hybrid Method to Support Natural Interaction of Parts in a Virtual Environment](#). Poster presented at the Emerging Technologies Conference, Ames, IA. **Awarded most interesting research project.**

Recent Publications

Bruno, Sean & Carlson, Patrick (2023). Podman vs Docker comparison via R Shiny project deployment. In [Proceedings of the 2023 Improving Scientific Software Conference](#), pages 10-14.

Carlson, Patrick (2015). Engaging developers in open source software projects: harnessing social and technical data mining to improve software development. In [Graduate Theses and Dissertations](#), pages 1-192, Ames, IA.