## Samuel C. Procter


CONTACT INFORMATION

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RESEARCH INTERESTS

Tool Supported Software Engineering, Software Verification, Safety Critical Software, Model Checking, High-Performance Computing.

EDUCATION

**Kansas State University**, Manhattan, Kansas USA **August 2016**
Ph.D., Computer Science GPA: 4.000

**Kansas State University**, Manhattan, Kansas USA **August 2011**
M.S., Computer Science GPA: 4.000

**University of Nebraska**, Lincoln, Nebraska USA **May 2009**
B.S., Computer Science, Raikes School of Computer Science and Management

CURRENT

**Software Engineering Institute, Carnegie Mellon University**, Pittsburgh, Pennsylvania USA
*Architecture Researcher* **August 2016 - Present**
Develop theory, tooling, and processes for architecture-centric software engineering as both principal investigator and team member.

ACADEMIC EXPERIENCE

**Kansas State University**, Manhattan, Kansas USA
*Graduate Research Assistant* **January 2012 - August 2016**
*National Science Foundation / US Food and Drug Administration Scholar-In-Residence*
Developing the MDCF Architect, an integrated development environment for application development for K-State's Medical Device Coordination Framework (MDCF). Doctoral level coursework and research projects.

*Lecturer* **October 2015**
*Size: 54 Students* Instructor Rating: 4.3 / 5
Taught five-week functional module in Kansas State's programming paradigms course. Updated existing slides, delivered lectures, developed labs, updated homework, created exam, held office hours, and assisted with course management.

*Graduate Research Assistant* **August 2009 - December 2011**
Developed Kinerja, a model checker for workflows encoded in YAWL. Masters level coursework and research projects.

*Undergraduate Research Assistant* **May 2007 - August 2009**
Developed Medical Device Coordination Framework and conducted performance tests on Beocat, a high-performance computing cluster. Worked with $\Sigma o \varphi \iota \alpha$, externally-developed regression test selection software.

**University of Nebraska**, Lincoln, Nebraska USA
*Teaching Assistant* **August 2007 - December 2007**
Held office hours, graded assignments, assisted with course management.

HONORS AND AWARDS

- Kansas State University: University Distinguished Professors Graduate Student Award 2015

- Kansas State University: Phi Kappa Phi 2010
- Jeffrey S. Raikes School of Computer Science and Management 2005-2009
- University of Nebraska: Dean's List 2005-2008
- National Speech and Debate Association: All American 2005
- Boy Scouts of America: Eagle Scout 2004

## Publications

1. Sam Procter. "A Development and Assurance Process for Medical Application Platform Apps." Ph.D. Dissertation, 2016, Kansas State University. Major Professor: Dr. John Hatcliff.
2. Yu Jin Kim, Sam Procter, John Hatcliff, Venkatesh-Prasad Ranganath, Robby. "Ecosphere Principles for Medical Application Platforms." IEEE International Conference on Healthcare Informatics (ICHI 2015), October 2015.
3. Sam Procter, John Hatcliff, Sandy Weininger, Anura Fernando. "Error Type Refinement for Assurance of Families of Platform-Based Systems." International Workshop on Assurance Cases for Software-Intensive Systems (ASSURE) at the International Conference on Computer Safety, Reliability, and Security (SAFECOMP 2015), September 2015.
4. Andrew L. King, Lu Feng, Sam Procter, Sanjian Chen, Oleg Sokolsky, John Hatcliff, Insup Lee. "Towards Assurance for Plug & Play Medical Systems." International Conference on Computer Safety, Reliability, and Security (SAFECOMP 2015), September 2015.
5. Sam Procter, John Hatcliff. "An Architecturally-Integrated, Systems-Based Hazard Analysis for Medical Applications." Twelfth ACM/IEEE International Conference on Formal Methods and Models for Codesign (MEMOCODE 2014), October 2014, pp. 124 - 133.
6. Sam Procter, John Hatcliff, Robby. "Towards an AADL-Based Definition of App Architecture for Medical Application Platforms." Proceedings of the 2014 Software Engineering in Healthcare (SEHC) Workshop at the International Symposium on Foundations of Health Information Engineering and Systems (FHIES 2014), July 2014 (Post-Proceedings To Appear)
7. Brian Larson, John Hatcliff, Sam Procter, and Patrice Chalin, "Requirements Specification for Apps in Medical Application Platforms." Proceedings of the 2012 ICSE Workshop on Software Engineering in Health Care (SEHC 2012), June 2012, pp. 26 - 32.
8. Sam Procter. "Kinerja: A Workflow Execution Environment." M.S. Thesis, 2011, Kansas State University. Major Professor: Dr. John Hatcliff.
9. Andrew King, Dave Arney, John Hatcliff, Sam Procter, Insup Lee, and Oleg Sokolsky, "Prototyping Closed Loop Physiologic Control with the Medical Device Coordination Framework." Proceedings of the 2010 ICSE Workshop on Software Engineering in Health Care (SEHC 2010), May 2010, pp. 1 - 11.
10. Andrew King, Sam Procter, Dan Andresen, John Hatcliff, Steve Warren, William Spees, Raoul Jetley, Paul Jones, Sandy Weininger. "A Publish-Subscribe Architecture and Component-based Programming Model for Medical Device Coordination and Integration", SIGBED Review, Volume 6, Number 2, July 2009 Special Issue on the 2nd Joint Workshop on High Confidence Medical Devices, Software, and Systems (HCMDSS) and Medical Device Plug-and-Play (MD PnP) Interoperability, July 2009, pp. 141 - 151.
11. Andrew King, Sam Procter, Dan Andresen, John Hatcliff, Steve Warren, William Spees, Raoul Jetley, Paul Jones, Sandy Weininger. "Demonstration of a medical device integration and coordination framework" ICSE-Companion 2009. 31st International Conference on Software Engineering - Companion Volume, May 2009, pp. 433 - 434.
12. Andrew King, Sam Procter, Dan Andresen, John Hatcliff, Steve Warren, William Spees, Raoul Jetley, Paul Jones, Sandy Weininger. "An Open Test Bed for Medical Device Integration and Coordination", Proceedings of International Conference on Software Engineering (ICSE

2009), (Software Engineering in Practice Track). ICSE-Companion 2009. 31st International Conference on Software Engineering, May 2009, pp. 141 - 151.

## Presentations

1. Sam Procter, John Hatcliff, Anura Fernando, Sandy Weininger. "Error Type Refinement for Assurance of Families of Platform-Based Systems" Third International Workshop on Assurance Cases for Software-Intensive Systems (ASSURE 2015), Delft, The Netherlands, September 2015.
2. Sam Procter, John Hatcliff, Anura Fernando, Kim Fowler, Sandy Weinenger. "Applying STPA-based Hazard Analysis to support Hazard-Based Safety Engineering for Systems Using Medical Application Platforms" IEEE Symposium on Product Compliance Engineering (ISPCE 2015), Chicago Illinois, May 2015.
3. Sam Procter, John Hatcliff, Anura Fernando, Sandy Weininger. "Using STPA to support Risk Management for Interoperable Medical Systems" Fourth STAMP Workshop (STPA 2015), Cambridge Massachusetts, March 2015.
4. Sam Procter, John Hatcliff, Robby. "Towards Assurance of a Patient-Specific Network of Medical Devices." Software Certification Consortium (SCC 2015), Rockville Maryland, January 2015.
5. Sam Procter, John Hatcliff. "An Architecturally-Integrated, Systems-Based Hazard Analysis for Medical Applications. International Conference on Formal Methods and Models for System Design (MEMOCODE 2014), Lausanne Switzerland, October 2014.
6. Sam Procter, John Hatcliff, Robby. "Towards an AADL-Based Definition of App Architecture for MAPs. International Workshop on Software Engineering in Healthcare (SEHC 2014), Washington DC, July 2014

## Service

**Kansas State University**, Manhattan, Kansas USA

*Engineering Graduate Student Advisory Council* **August 2013 - May 2016**
Member of council responsible for improving quality of life for current and prospective engineering graduate students through professional development, social activities, and interactions with departmental and university administrators.

*Association for Computing Machinery* **September 2014**
Presenter. Introduced undergraduates to source control with git.

*Undergraduate Poster Forum* **April 2014**
Volunteer judge. Provided feedback to undergraduates in engineering who were presenting their research.

*High School Programming Contest* **October 2010**
Volunteer. Answered questions as necessary.

## Professional Development

**Graduate Engineering Leadership Program** **Spring 2015**

Worked with peers and professional leadership coaches from the Staley School of Leadership Studies and the Kansas Leadership Center. Custom, semester-long program created specifically for graduate students in engineering to move beyond technical expertise, focusing on learning and applying adaptive leadership competencies to student and professional life.

## Affiliations

**Association for Computing Machinery** **2015 - Present**
Member

**Institute of Electrical and Electronics Engineers** **2015 - Present**
Member

## Professional Experience

**Kansas State University Housing and Dining**, Manhattan, Kansas USA

*Web Developer* **May 2006 - August 2006**

Developed several database-driven web applications with dynamic, responsive front-ends. Technologies used: HTML, CSS, JavaScript, PHP, MySQL

## Technical Skills

- Hazard Analyses: STAMP / STPA, FMECA, FTA
- System Design: Software Architecture Design and Documentation (e.g., Module, and Component-and-Connector styles)

## Computer Skills

- Languages
  - Fluent: Java, AADL, Python, Markdown, StringTemplates
  - Proficient: ReST, SML, PHP
  - Prior Experience: C++, CSS, JavaScript, Haskell
- Applications
  - Fluent: OSATE, Eclipse, Sphinx, Pygments
  - Proficient: git, Jenkins, LaTeX, YAWL, JUnit, Maven, Java Pathfinder, spreadsheet and presentation software
  - Prior Experience: ANTLR, UPPAAL, RT-Spin, OCL, Alloy, JML, JaCoCo, Dot/Graphviz, Coq, Photoshop
- Operating Systems
  - Proficient: GNU+Linux, Windows, Mac OS X, Android

## References

Available upon request.