Daniel Smullen

Education

Ph.D. **Software Engineering (In Progress)**
Carnegie Mellon University, Institute for Software Research
Advised by Travis D. Breaux and David Garlan

B.Eng. (Honors) **Software Engineering**
UOIT (Canada), Graduated *summa cum laude*, 2014

Research & Industry Experience

September 2014 to Present

Graduate Research Assistant
Carnegie Mellon University

Studying the hoisting of non-functional requirements (such as privacy and security) into software architecture by leveraging formalized specification of legal policies. Actively working on the development of the Eddy requirements specification language toolset.

May to August 2015

334F Affiliate
NASA - Jet Propulsion Laboratory

Developed a resolution-preserving image processing pipeline for interferometric synthetic aperture radar imagery. Engineered a cross-platform Python/C11 application that reduced processing time from weeks to minutes. Incorporated multithreading using OpenMP and multiprocessing using MPI. Tested on a variety of workstations and high performance clusters. Currently used in production with the UAVSAR project in the radar science and instrument engineering section.

September 2013 to May 2014

Researcher
UOIT - Software Quality Research Lab

Investigated user privacy in metadata released unknowingly through Internet traffic, and perceptions thereof in an ethics board approved user study. Also conducted a novel investigation of the Software Testing Coupling Effect using a variety of mutation testing tools and automation.

April to September 2013

Researcher
UOIT - Software Engineering Lab

Studied tinyOS based wireless sensor networks, applying policy-based programming to create a new development environment (Policy IDE). Server-based and console-based variants using IPv6 running on embedded systems were also created. Published and presented at EUSPN-2013 (Elsevier), and the Stanford tinyOS wiki.

April 2011 to September 2012

Engineer-In-Training
SNC-Lavalin

Conducted research on mission-critical systems, analyzing network traffic and file system logs toward better disaster recovery, and infrastructure planning. Developed a novel workstation staging system, reducing the time for new workstation deployments from 160 minutes to 20 minutes.

April to December 2009

JEGEL/DESSAU (LVM-Technisol)

Implemented a laboratory information management system, managing sample logging and lab process queuing. Gained comprehensive field experience in geotechnical and QA testing. Managed the 2009 Toronto Capital Works probehole drilling program. Oversaw integration of computer systems during the JEGEL/LVM merge.

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Selected Refereed Works

T.D. Breaux, **D. Smullen**, H. Hibshi, *"Detecting Repurposing and Over-Collection in Multi-party Privacy Requirements Specifications,"* 23rd IEEE International Requirements Engineering Conference (Ottawa, Canada), 2015

D. Smullen, et al., *"Genetic Algorithm with Self-Adaptive Mutation Controlled by Chromosome Similarity,"* IEEE World Congress on Computational Intelligence (Beijing, China), 2014

D. Smullen, et al., *"IRIS - Incident Recognition and Intelligence System," (Autonomous Highway Surveillance System)* Capstone Research Project, *First Place in UOIT Capstone Competition*, 2014.

J. Gillett, J. Heron, **D. Smullen**, *"How Much Do We Reveal Through Metadata? An Assessment of Online Privacy,"* Poster, IBM Consortium for Software Engineering Research, 2013

N. Qwasmi, **D. Smullen**, R. Liscano, *"Integrated development environment for debugging policy-based applications in wireless sensor networks,"* 4th International Conference on Emerging Ubiquitous Systems and Pervasive Networks (Niagara Falls, Canada), 2013

D. Smullen, *"Facilitating the Internet of Things with Policy Programming,"* Poster and Presentation, UOIT Student Research Showcase (Oshawa, Canada), 2013

Policy IDE, TOSServ, Finger2IPv6 Projects, tinyOS Community Wiki, Stanford University

SneakyFS file system design and implementation.
Special recognition for best project in UOIT ENGR3950.
Supervisor: Dr. K. Sartipi, P.Eng.

Mission-critical datacenter utilization, availability, and performance assessment for SNC-Lavalin GIT risk management and infrastructure remediation. *Supervisor: M. Ross, Senior Vice-President*

Awards

2015	**Ready-Set-Transfer Award** *23rd IEEE International Requirements Engineering Conference*
2014	**EECS Undergraduate Capstone Design Challenge Winner - 1st Place** *University of Ontario Institute of Technology*
2012 - 2014	**President's Honors List** *University of Ontario Institute of Technology*
2013	**NSERC (Canada) Undergraduate Student Research Award**
2011	**Dean's Honors List** *University of Ontario Institute of Technology*
2007	**Winner, DaVinci Engineering Design Challenge** *University of Toronto*

Memberships and Curios

Language Proficiency in English, French, German

IEEE, est. 2013	Student Member
Red Cross, est. 2011	Emergency First Aid, CPR and Defibrillator (Class C)
Burlington Rifle & Revolver Club, est. 2009	Range Officer and Full Member