

Sydney Pugh

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Education

Ph.D. in Computer and Information Science Expected 2023
University of Pennsylvania, Philadelphia, PA
Advised by Dr. Insup Lee and Dr. James Weimer

M.S. in Engineering in Computer and Information Science Aug 2019 – May 2021
University of Pennsylvania, Philadelphia, PA

B.S. in Applied Mathematics and Computer Science Aug 2015 – May 2019
Loyola University Maryland, Baltimore, MD
Summa Cum Laude, Phi Beta Kappa, Pi Mu Epsilon, Upsilon Pi Epsilon

Research Interests

Machine Learning; Internet of Medical Things (IoMT); Security

Technical Skills

Proficient Python, Java, C, MATLAB, Git, Linux, MacOS

Familiar HTML/CSS, SQL, JavaScript, IDA Pro

Projects

Data Programming Dec 2019 – Present
– Improving Snorkel by providing tools to compute required priors and unknowns
– Calibrating confidence of Snorkel (tool for data programming) without true labels

Smart Alarm 2.0 Aug 2019 – Present
– Developing technology to suppress false alarms to reduce clinical alarm fatigue
– Interview nurses and clinicians to determine how they classify false alarms

Fall Risk Prediction Aug 2019 – May 2021
– Developed method for predicting changes in inpatient fall risk given clinical notes and medication information

Cryptographic Implementation Testing May 2018 – May 2019
– Developed test strategies for public-key cryptographic algorithm implementations
– Tests identified all known, and several unknown, bugs in NIST Lightweight Cryptography and Post-Quantum Cryptography Standardization submissions

Adaptive Software Change Impact Analysis May 2017 – May 2019
– Improved scalability for suggesting files potentially affected by staged code changes with new algorithms that use a dynamic amount of versioning history

Publications, Presentations, and Posters

1. **Pugh, S.**, Ruchkin, I., Bonafide, C. P., DeMauro, S. B., Sokolsky, O., Lee, I., and Weimer, J., “High-Confidence Data Programming for Evaluating Suppression of Physiological Alarms.” *ACM/IEEE Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE)*, 2021. [Paper]
2. Lu, P., Li, X., Jang, S., Lee, A., **Pugh, S.**, Watson, A., Bjarnadottir, R., Lucero, R., Demiris, G., Nenkova, A., Weimer, J., and Lee, I., “FRED: Fall Risk Evaluation Database Based on Electronic Health Record Data.” *ACM/IEEE Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE)*, 2021. [Poster]
3. Moonen, L., Binkley, D., and **Pugh, S.**, “On Adaptive Change Recommendation.” *Journal of Systems and Software*, 2020. [Paper]
4. **Pugh, S.**, Raunak, M. S., Kuhn, R., and Kacker, R., “Systematic Testing of Lightweight Cryptographic Implementations.” *NIST Lightweight Cryptography Workshop*, 2019. [Extended Abstract]
5. **Pugh, S.**, Raunak, M. S., Kuhn, R., and Kacker, R., “Systematic Testing of Post-Quantum Cryptographic Implementations Using Metamorphic Testing.” *4th International Workshop on Metamorphic Testing*, 2019. [Paper]
6. **Pugh, S.**, Binkley, D., and Moonen, L., “The Case for Adaptive Change Recommendation.” *IEEE 18th International Working Conference on Source Code Analysis and Manipulation*, 2018. [Paper]
7. **Pugh, S.**, and Binkley, D., “Change Impact using Dynamic History Analysis.” *49th ACM Technical Symposium on Computer Science Education*, 2018. [Poster]

Research Experience

Summer Undergraduate Research Fellowship	May 2019 – Aug 2019
National Institute of Standards & Technology, Gaithersburg, MD	May 2018 – Aug 2018
<i>Mentored by Dr. Richard Kuhn and Dr. Mohammad Raunak</i>	
Research Assistant	Sep 2017 – May 2018
Loyola University Maryland, Baltimore, MD	
<i>Mentored by Dr. David Binkley</i>	
Hauber Summer Research Fellowship	May 2017 – Aug 2017
Loyola University Maryland, Baltimore, MD	
<i>Mentored by Dr. David Binkley</i>	

Teaching Experience

Teaching Assistant, CIS-441/541: Embedded Software Aug 2020 – Dec 2020
University of Pennsylvania, Philadelphia, PA

- Held weekly office hours; collaborated in designing semester assignments, exams, and grading.

Volunteer Classroom Assistant Oct 2018 – Feb 2019
Guilford Elementary/Middle School, Baltimore, MD

- Ran one-on-one and small group tutoring sessions to reinforce mathematical concepts for the middle school students and assisted with class preparation.

Tutor in the Department of Mathematics Aug 2018 – May 2019
Loyola University of Maryland, Baltimore, MD

- Tutored fellow undergraduates in calculus, business calculus, and statistics.

Coursework

Graduate Machine Learning, Computer & Network Security, Advanced Topics in Privacy and Anonymity, Advanced Topics in Privacy Enhancing Technologies, Internet & Web Systems, Analysis of Algorithms, Software Foundations, Embedded Software

Undergraduate Reverse Software Engineering for Cybersecurity, Software Engineering, Software Testing

Achievements and Awards

Eniac Fellowship 2019
University of Pennsylvania

Abha Ahuja Scholarship 2019
North American Network Operators' Group (NANOG)

Honorable Mention Team in the Mathematical Contest in Modeling (MCM) 2019
Loyola University Maryland

1st Place Natural and Applied Science Division in the Undergraduate Student Research & Scholarship Colloquium 2018
Loyola University Maryland

T. Rowe Price Scholarship 2017
Loyola University Maryland