curriculum vitæ of

Jacob Scott Laurel

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Education

Aug. 2017 – present **Ph.D.** in Computer Science — University of Illinois at Urbana-Champaign
Advisor: Sasa Misailovic
Research area: Probabilistic and Differentiable Programming Languages, Neural Network Verification and Approximate Computing

Aug. 2012 – May 2017 **B.S.** in Mathematics (summa cum laude) — University of Alabama at Birmingham
B.S.E.E in Electrical Engineering (summa cum laude)

Work Experience

May 2019 – Aug. 2019 Ph.D. Research Intern — NASA Langley Research Center
Mentors: Cesar Munoz and Aaron Dutle
Applied Program Analysis to quantify floating point error in probabilistic programs

May 2016 – Aug. 2016 Undergraduate Research Intern — University of Central Florida
Helped develop a novel video summarization technique using LSTM Deep Neural Networks. Work published in **CVPR 2017**

Publications

Conference and Journal Publications

1. **Jacob Laurel**, Rem Yang, Gagandeep Singh, Sasa Misailovic. A Dual Number Abstraction for Static Analysis of Clarke Jacobians. In *Symposium on Principles of Programming Languages* **(POPL 2022)**
2. Vimuth Fernando, Keyur Joshi, **Jacob Laurel**, Sasa Misailovic. Diamont: Dynamic Monitoring of Uncertainty for Distributed Asynchronous Programs. In *21st International Conference on Runtime Verification* **(RV 2021)**.
3. **Jacob Laurel**, Rem Yang, Atharva Seghal, Shubham Ugare, Sasa Misailovic. Statheros: A Compiler for Efficient Low-Precision Probabilistic Programming . In *58th Design Automation Conference* **(DAC 2021)**.
4. **Jacob Laurel**, Sasa Misailovic. Continualization of Probabilistic Programs with Correction. In *Proceedings of the 29th European Symposium on Programming* **(ESOP 2020)**.
5. Aidean Sharghi, **Jacob Laurel**, Boqing Gong. Query-Focused Video Summarization: Dataset, Evaluation, and A Memory Network Based Approach. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition* **(CVPR 2017)**.

Presentations

6. **Jacob Laurel**. Exact Quantification of Continuity Correction Error in Probabilistic Programs. Poster presented at *1st International Conference on Probabilistic Programming **(PROBPROG 2018)***.

Honors

2020-Present UIUC FLIP Fellow
2017-Present UIUC Sloan UCEM Fellowship
2012-2016 UAB Presidential Scholarship as National Hispanic Recognition Program Scholar
2015 UAB School of Engineering Undergraduate Research Award for Honors Research

2015 UAB School of Engineering Dean's Scholarship
2013 Inducted into Tau Beta Pi

Skills

Programming languages: `C/C++`, `Python`, `Java`, `JavaScript/WebPPL`
Software: `Linux`, `LLVM`, `Pyro`, `TensorFlow`, `PyTorch`

Teaching

Spring 2018 CS 374 Algorithms and Models of Computation
Fall 2018 CS 173 Discrete Structures
Spring 2019 CS 126 Software Design Studio
Fall 2019 CS 421 Programming Languages and Compilers

Undergraduate Mentoring

Feb. 2020-present Rem Yang - Co-author on (1,3)
Mar. 2020-May 2021 Atharva Seghal - Co-author on (3)
May. 2021-present Robert Nagel

Service

Fall 2019 Organizer - UIUC Brett Daniel Software Engineering Seminar

2021 Artifact Evaluation Committee - OOPSLA 2021

Other Experiences

Summer 2018 Attended Oregon Programming Languages Summer School (*OPLSS*)
Fall 2019 Attended Midwest PL Summit at Purdue University
Fall 2019 Attended Sloan Institute on Teaching and Mentoring Conference in Atlanta, GA
December 2020 Attended Microsoft Research Ph.D. Summit as UIUC FLIP Fellow