

curriculum vitae of  
Jacob Scott Laurel

📧 <https://jsl1994.github.io/>    ✉ [jlaurel2@illinois.edu](mailto:jlaurel2@illinois.edu)

## EDUCATION

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Aug. 2017 – present	<b>Ph.D.</b> in Computer Science Advisor: Sasa Misailovic Research area: Probabilistic and Differentiable Programming Languages, Neural Network Verification and Approximate Computing	UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
Aug. 2012 – May 2017	<b>B.S.</b> in Mathematics (summa cum laude) <b>B.S.E.E</b> in Electrical Engineering (summa cum laude)	UNIVERSITY OF ALABAMA AT BIRMINGHAM

## WORK EXPERIENCE

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May 2019 – Aug. 2019	Ph.D. Research Intern Mentors: Cesar Munoz and Aaron Dutle Applied Program Analysis to quantify floating point error in probabilistic programs	NASA LANGLEY RESEARCH CENTER
May 2016 – Aug. 2016	Undergraduate Research Intern Helped develop a novel video summarization technique using LSTM Deep Neural Networks. Work published in <b>CVPR 2017</b>	UNIVERSITY OF CENTRAL FLORIDA

## PUBLICATIONS

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### 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 *58<sup>th</sup> Design Automation Conference (DAC 2021)*.
4. **Jacob Laurel**, Sasa Misailovic. Continualization of Probabilistic Programs with Correction. In *Proceedings of the 29<sup>th</sup> 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 *1<sup>st</sup> International Conference on Probabilistic Programming (PROBPROG 2018)*.

## HONORS

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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

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

## TEACHING

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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

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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

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Fall 2019 Organizer - UIUC Brett Daniel Software Engineering Seminar  
  
2021 Artifact Evaluation Committee - OOPSLA 2021  
  
2021 Artifact Evaluation Committee - SAS 2022  
  
2021 Reviewer - ECCV 2022

## OTHER EXPERIENCES

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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