Shubham Ugare

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Research Interest

Currently, I am working on verifying the properties of neural networks using abstract interpretation and other formal methods. My broad research interests are programming languages, software engineering, and program verification.

Education

- **University of Illinois, Urbana-Champaign** IL, USA
  PhD *2020 -*

  - Computer Science 4.0/4.0
    (Adviser: Prof. Sasa Misailovic)

- **Indian Institute of Technology, Guwahati** Guwahati, India
  BTech *2014 - 2018*

  - Major in Computer Science and minor in Mathematics - 9.42/10.0
    Bachelor thesis : Succinct data structure problems (Adviser: Prof. Srinivasa Rao Satti)

Publications

1. **Proof Transfer for Fast Certification of Multiple Approximate Neural Networks**
   Shubham Ugare, Gagandeep Singh, Sasa Misailovic
   In OOPSLA 2022

2. **Statheros: A Compiler for Efficient Low-Precision Probabilistic Programming**
   Jacob Laurel, Rem Yang, Atharva Sehgal, Shubham Ugare, Sasa Misailovic
   In DAC 2021

3. **Secure Medical Image Analysis with CrypTFlow***
   Javier Alvarez-Valle, Pratik Bhatu, Nishanth Chandran, Divya Gupta, Aditya Nori, Aseem Rastogi, Mayank Rathee, Rahul Sharma, Shubham Ugare
   In PPML@NeurIPS 2020

4. **Approximate Query Processing over Static Sets and Sliding Windows***
   Ran Ben Basat, Seungbum Jo, Srinivasa Rao Satti, Shubham Ugare.
   In ISAAC 2018 and TCS 2021 Slides Full paper

   (* marked author names are alphabetically sorted)

Work experience

- **Microsoft Research**   Bangalore, India
  Research Software Engineer   *Oct 2019 - Jul 2020*
    - Worked with Dr. Rahul Sharma (MSR) on SeeDot DSL that performs fixed-point compilation of ML models.

- **Uber**   Bangalore, India
  Software Engineer   *July 2018 - Oct 2019*
    - **Uber Lite and Uber bus:**
      Worked on Uber Lite application in a team of 6 android engineers. Launched it to 25 countries.
    - **Static Analysis: NullAway:**
      Worked with Dr. Manu Sridharan (UC Riverside) and Dr. Lazaro Clapp (Uber INC.) on NullAway static analysis tool to statically find JAVA NPEs. [Contribution](#)

- **Max Plank Institute of Software Systems**   Kaiserslautern, Germany
  Research fellow   *May 2018 - July 2018*
    - Worked with Dr. Daniel Neider (MPI-SWS) on imporving the performance of the Horn-ICE tool and submitted the tool in the Invariant synthesis track of SyGus-comp 2018. [Technical Report](#)

- **Seoul National University**   Seoul, South Korea
  Research Intern   *May 2017 - July 2017*
    - Worked with Dr. Srinivasa Rao Satti (SNU) and Dr. Ran Ben Basat (Harvard) on finding succinct data structures to solve some common problems. Solved multiple related problems and published the paper with a title Approximate Query Processing over Static Sets and Sliding Windows. Continued this as **Bachelor thesis**. [ArXiv link](#)

Achievements

1. Competitive Programming competitions

   - **ACM ICPC**: Ranked **5th** in ACM ICPC Kharagpur regionals and **7th** rank in ACM ICPC Chennai regionals.
   - **Goldman Sachs Quantify**: **1st** rank with 3500+ participants.
   - **Codenation 2017**: **4th** rank in the contests with 8000+ participants.

2. Pre-university exams

   - **Mathematics Olympiad 2013 and 2014**: Qualified for the Indian National Mathematics Olympiad (INMO 2013) by securing **13th** rank and for INMO 2014 by securing **6th** rank in state.
   - **JEE 2014**: Ranked in top 0.1% students in 1.3 million candidates appearing for the test.