Xuanyu Peng

 DOFYPXY | 🌐 home.dofy.top | ✉ dofypxy@pku.edu.cn | 📱 +86.198.0118.9807

Bio

I'm Xuanyu Peng, an undergraduate student from Turing Class, Peking University. I am now a member of Programming Language Lab, supervised by Prof. Yingfei Xiong and Prof. Di Wang. My research interests include program synthesis and resource analysis.

Research Experience

Program Languages Lab, Peking University — Mar 2021 - June 2023
Research assistant, supervised by Prof. Yingfei Xiong and Prof. Di Wang

Education

Peking University — **Beijing, China**
Turing Class, *Bachelor of Science in Computer Science & Technology* — Sep 2019 - June 2023
GPA: **3.80**/4.0 (rank: **14**th/200)
Honor Track Courses: *Operating Systems, Algorithm Design and Analysis,*
Discrete Mathematics and Structures, Data Structure and Algorithms, Introduction to Computing

Projects

Rust Resource Analysis by Functional Translation
- Leverage fine-grained memory model to improve the precision and efficiency of resource analysis.
- First to combine functional translation tool Aeneas and resource analysis tool RaML.

Advisor: Di Wang

Synthesizing Efficient Memoization Algorithms for Combinatorial Problems
- First to formulate two attributes of memoization and propose reductions from synthesizing memoization algorithms to two smaller program synthesis tasks.
- Proposed dedicated algorithms to solve two synthesis tasks effectively.
- Successfully synthesize 37/40 problems in a benchmark which consists of most popular CPs in the real world.

Advisor: Yingfei Xiong

Medjai: Symbolic Reasoning for Starknet/Cairo dApps — Link to Demo
- Check whether certain properties hold on Cairo program, or solve for concrete inputs that crash given program.
- First verification tool for zero-knowledge proof circuits.

Publications

[1] Y. Sun, X. Peng, and Y. Xiong, "Synthesizing efficient memoization algorithms for combinatorial problems," *Proceedings of the 2023 ACM SIGPLAN International Conference on Object Oriented Programming Systems Languages & Applications*, 2023.

Scholarships and Awards

Gold Award (7th place), The 44th ACM-ICPC Asia Regionals Xuzhou Site	2019
Silver Award, The 5th CCPC Xiamen Site	2019
Peking University Merit Student	2020
Ubiquant Scholarship	2021
John Hopcroft's Scholarship	2022

Skills

Programming Languages   C/C++, Python, Java, Rust, Coq, Racket, LaTeX