Yubo Du

EMAIL: yubo.du@pitt.edu • **HOMEPAGE:** duyubo.github.io
Google Scholar: https://scholar.google.com/citations?user=q8kKxSYAAAAJ&hl=en

RESEARCH INTEREST

Memory safety, runtime sanitizers, system security, compilers

EDUCATION

University of Pittsburgh 2022/01 – present
Ph.D., Electrical and Computer Engineering Advisor: Prof. Jun Yang

Vanderbilt University 2020/01 - 2021/12
M.S., Computer Science Advisor: Prof. Gautam Biswas

University of Science and Technology of China 2014/08 - 2018/06
B.S., Physics

WORK EXPERIENCES

Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences 2018/08 - 2019/04
Research Assistant Reconstructing 3D Information from 2D Images with Deep Learning Models

RESEARCH EXPERIENCES

- University of Pittsburgh Advisor: Dr. Jun Yang 2023/01 - present
  Defending Against Temporal Memory Safety Vulnerabilities

  - Developed performance- and memory-efficient techniques for use-after-free (UAF) detection and prevention in C/C++, while preserving existing security guarantees.

  - Proposed *reuse-time tracking (RTT)*, reducing the performance overhead by up to **10**× through eliminating explicit metadata propagation.

  - Designed *fast pointer nullification (FPN)*, achieving up to **19**× lower memory overhead by invalidating dangling pointers at a coarse-grained level.

  - Implemented compiler instrumentations with LLVM and runtime detection/prevention libraries in C/C++.

  - Published work in **ICS 2024** and **NDSS 2026** .

- Vanderbilt University Advisor: Dr. Gautam Biswas 2021/03 - 2021/12
  Differential Neural Architecture Search for Recurrent Neural Network

  - Expanded the search space of RNN to relax the constraints in RNN architecture

  - Proposed a novel framework which increases the network topology progressively

  - 1% - 17% less relative square error than SOTA on time series prediction tasks

  - 1.5X higher training efficiency than Differentiable Architecture Search (DARTs)

PROJECT EXPERIENCES

- University of Pittsburgh Advisor: Dr. Peipei Zhou 2022/01 - 2022/12
  Video and Audio based Real-time Sentiment Analysis on Embedded Devices
  - Transformer based deep learning architecture
  - Deploying on Jetson Tx2 with 256-core Pascal GPU and 8GB memory

RESEARCH PAPERS

[NDSS'26] **Yubo Du**, Yanan Guo, Youtao Zhang, Jun Yang, "Fast Pointer Nullification for Use-After-Free Prevention," To appear in Proceedings of the 34th Network and Distributed System Security Symposium, NDSS 2026, February 23 - 27, San Diego, CA, USA.

[ICS'24] **Yubo Du**, Youtao Zhang, Jun Yang, "RTT-UAF: Reuse Time Tracking for Use-After-Free Detection," Proceedings of the 38th ACM International Conference on Supercomputing, ICS 2024, June 4 - 7, Kyoto, Japan.

[FPGA'23] Jinming Zhuang, Jason Lau, Hanchen Ye, Zhuoping Yang, **Yubo Du**, Jack Lo, Kristof Denolf, Stephen Neuendorffer, Alex Jones, Jingtong Hu, Deming Chen, Jason Cong, Peipei Zhou, "CHARM: Composing Heterogeneous Accelerators for Matrix Multiply on Versal ACAP Architecture," Proceedings of the 2023 ACM/SIGDA International Symposium on Field-Programmable Gate Arrays, FPGA 2023, February 12 – 14, Monterey, CA, USA.

[ITS'20] Yanling Tian, **Yubo Du**, Qieshi Zhang, Jun Cheng, Zhuo Yang, "Depth Estimation for Advancing Intelligent Transport Systems Based on Self-Improving Pyramid Stereo Network," *IET Intelligent Transport Systems*, ITS 2020.

HONORS AND AWARDS

- **DAC Young Fellow, 2022**
- **DAC University Demonstration 3rd Place Award, 2022**

ACADEMIC SERVICES

- **Artifact Evaluation**
  - MLSys, 2022
  - ASPLOS, 2026
- **Subreviewer**
  - MLSys, 2022
  - CODES+ISSS, 2022
  - ASP-DAC, 2023

SKILLS

- **Programming Languages**
  C/C++, Python, MATLAB
- **Frameworks**
  LLVM, Pytorch