

JAINTA PAUL

<https://pauljainta.github.io/jp/>

Salt Lake City, USA

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Education

Ph.D. Student

Kahlert School of Computing, University of Utah
Security, Safety, and Privacy of Cyber Physical Systems

January 2024 - Present

Bachelor of Science

Computer Science and Engineering
Bangladesh University of Engineering and Technology (BUET)

February 2017 - May 2022

Higher Secondary Certificate(Science Track)

Notre Dame College

August 2014 - June 2016

Publications

- [The 17th NASA Formal Methods Symposium (NFM2025)] [HyTwin: Hybrid Program Semantics for Digital Twin-based Security Interventions in Industrial Control Systems](#)
Jainta Paul, Stefan Mitsch, and Luis Garcia
- [CCS-RICSS'24] [Towards Cross-Physical-Domain Threat Inference for Industrial Control System Defense Adaptation](#)
Jainta Paul, Lawrence Ponce, Mu Zhang, and Luis Garcia
In The 2nd International Workshop on Re-design Industrial Control Systems with Security (RICSS), co-located with The 31st ACM Conference on Computer and Communications Security (CCS), Salt Lake City, Utah, October 2024.
- [The 55th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)] [ICSTRACKER: Backtracking Intrusions in Modern Industrial Control Systems](#)
Md Raihan Ahmed, Jainta Paul, Levi Li, Luis Garcia, and Mu Zhang

Ongoing Research Projects

- **Listening Without Hearing: Unmasking Privacy Risks in On-Sensor Machine Learning**
Investigating privacy vulnerabilities and data leakage risks in machine learning models operating directly on sensor hardware at the edge.
Jainta Paul, Miles Bovero, Pratik Soni, Luis Garcia

Professional Experience

Software Engineer, [OpenRefactory, Inc.](#)

June 2022 – November 2023

- **Test Drive – OpenRefactory (Technical Leader)** Led the development of a web platform for initiating static code analysis trials on open-source projects. Implemented GitHub authentication, repository selection, and multi-language analysis support (Python, Java, Go).

- **Open Source Python and Java Projects – Bug Analysis and Reporting (Full Stack Developer & Security Engineer)** Performed static analysis to detect security and compliance bugs in open-source Python and Java projects. Automated bug reporting workflows to notify maintainers.
- **Intelligent Code Repair (iCR)** Enhanced the Java static bug detection engine by implementing call graph construction, points-to analysis, and static taint analysis to support automated code repair.

Skills

Programming	Java, Python, C/C++, Structured Text (IEC 61131-3), JavaScript, SQL, Torch, CUDA
Security & Analysis	Industrial Control System Security, Cyber-Physical Systems Security, Threat Modeling, Provenance Analysis, Cross-Domain Causality Tracking, Vulnerability Assessment, Static Taint Analysis
Formal Methods	Differential Dynamic Logic (dL), Formal Verification of CPS, Safety Property Specification, ModelPlex Runtime Monitoring
Tools & Frameworks	Git, Docker, Kubernetes
Other Skills	Technical Leadership, Research Mentoring, Academic Writing, Public Speaking

Leadership & Extracurricular Activities

- Mentored undergraduate students in research, leading to a peer-reviewed publication co-authored with a mentee.
- Competed in Capture the Flag (CTF), **iTrust SUTD (2024)**.
- Served on the Organizing Committee, BUET CSE FEST 2018.