

Erfan Habibi Panah Fard

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ABOUT

PhD Computer Science researcher with 3.5 years of full-stack software engineering experience. Building privacy-preserving systems and secure computation protocols at UB under Dr. Marina Blanton. Shipped production web applications using TypeScript, React, Next.js, NestJS, and Python. Actively seeking a Summer 2026 software engineering internship.

EDUCATION

Ph.D. in Computer Science

Aug 2024 – Present

University at Buffalo (SUNY) — Buffalo, NY

- GPA: 3.59/4.0 | Advisor: Dr. Marina Blanton | Coursework: Software Security (A), Operating Systems (A), Introduction to Machine Learning (A-), Algorithm Analysis & Design (A-), Parallel Algorithms

B.S. in Electrical and Electronics Engineering

Oct 2018 – Sep 2023

K. N. Toosi University of Technology — Tehran, Iran

- GPA: 3.46/4.0 | Research: EEG-based neural networks & brain-computer interfaces | 6th Place, 2020 International BCI Competition

EXPERIENCE

Research Assistant — Secure Computation Lab

Oct 2024 – Present

University at Buffalo, Dr. Marina Blanton — Buffalo, NY

- Engineered a new **Replicated Secret Sharing (RSS)** backend for the **PICCO compiler**, implementing **10+ secure floating-point protocols** (Int2FL, FL2Int, arithmetic, comparisons) in **C++** with formal correctness proofs
- Benchmarked **6 Private Information Retrieval (PIR)** schemes for **terabyte-scale genomic databases**, analyzing **LWE security parameters** and optimizing server/client computation and communication costs using **Python**
- Built with: **C++, Python, GMP, OpenSSL, CMake, lattice-based cryptography, Linux**

Graduate Teaching Assistant

Aug 2024 – Present

University at Buffalo — Buffalo, NY

- CSE 306** (Spring 2026) | **CSE 560** Data Models & Query Languages (Spring 2025) | **CSE 191** Discrete Structures (Fall 2024)
- Led and managed teams of up to **16 TAs**; designed assessments, held office hours, and improved course materials impacting **500+ students** across three semesters

Full-Stack Developer

Jan 2021 – Aug 2024

Bent Oak Systems (Elevista.ai) — Remote

- Architected and shipped **production features** for an **AI-driven SaaS platform** serving thousands of users; collaborated with product managers, designers, and a **cross-functional engineering team**
- Built **responsive UIs** and **RESTful API integrations** using **TypeScript, React, Next.js, Nest.js, Node.js, Tailwind CSS**; implemented **Redux** state management and reduced page load times
- Led **code reviews**, mentored junior developers, and established **CI/CD pipelines** with **Git** and **Docker**; maintained **PostgreSQL** and **MongoDB** database layers

PUBLICATION

- "A Deep Learning Algorithm for Classifying Grasp Motions using Multi-session EEG Recordings" — **IEEE**, 2021. Achieved **80% classification accuracy** using **ensemble deep learning** methods combining anomaly detection with **neural networks** for **brain-computer interface (BCI)** applications across 15 participants.

TECHNICAL SKILLS

Languages:	TypeScript, JavaScript, Python, C/C++, SQL, HTML/CSS
Frameworks:	React, Next.js, Nest.js, Node.js, Redux, Tailwind CSS, TensorFlow
Databases:	PostgreSQL, MongoDB, RESTful APIs
Tools & DevOps:	Git, Docker, CI/CD, Linux, GMP, OpenSSL, CMake, Figma
Research:	Secure Multiparty Computation, Private Information Retrieval, Cryptographic Protocols, Lattice-Based Cryptography, Machine Learning, Signal Processing

INTERESTS

Software Engineering | Compilers | Secure Multiparty Computation (MPC) | Private Information Retrieval (PIR) | Full-Stack Web Development