Edouard Dufour

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EXPERIENCE

Systems & Kernel Engineering Manager - SPEAR team
Apple Inc. - SEAR
Oct 2025 - *Present* Cupertino, CA

- Managing a small security engineering team focused on memory safety hardening for low-level software.
- Leading hiring for the SPEAR Systems & Kernel team.
- Providing technical guidance through design review, code review, and project planning.

System Software Engineer, Security - SPEAR team
Apple Inc. - SEAR
July 2023 - Oct 2025 Cupertino, CA

- C/C++ development for the XNU kernel and other low-level security components.
- Contributed to the design and evolution of critical kernel and firmware security subsystems.
- Collaborated with teams across Apple on security design and integration.
- Conducted over 60 engineering interviews.
- Developed memory safety onboarding material.

Security Software Engineer, Apple Vision Pro
Apple Inc. - Technology Development Group, Security
Feb 2020 - June 2023 Sunnyvale, CA

- Designed and implemented secure enclave software for the R1 chip.
- Developed cryptographic drivers, firmware, and other low-level software in C.
- Supported client teams adopting cryptographic APIs and related low-level software.
- Designed and implemented cryptographic protocols for low-level systems and constrained hardware environments.
- Collaborated with cross-functional teams on secure provisioning and device certification.

Software Engineering Intern
Google LLC - Enclave Crypto
Summer 2019 Sunnyvale, CA

- Designed cryptographic protocols for hardware enclaves and distributed-trust applications.
- Implemented a prototype using Oblivious PRFs and secret sharing in C++.
- Proposed an elliptic-curve-pairing variant to simplify enclave interactions.

Software Engineering Intern
Google LLC - Machine Learning Infrastructure Reliability
Summer 2018 Pittsburgh, PA

- Designed and implemented subgraph caching in TensorFlow Serving using C++ and Python.
- Improved model inference performance and reduced latency through efficient resource usage.

SELECTED PUBLICATIONS

Dynamic Decentralized Functional Encryption. CRYPTO 2020.

Partially Encrypted Machine Learning using Functional Encryption. NeurIPS 2019.

Unbounded Inner Product Functional Encryption, with Succinct Keys. ACNS 2019.

Decentralized Multi-Client Functional Encryption for Inner Product. ASIACRYPT 2018.

SELECTED TALKS

Dynamic Decentralized Functional Encryption
Presented at CRYPTO 2020.

Partially Encrypted Machine Learning using Functional Encryption
Presented at PPML 2019 (a CRYPTO 2019 workshop).

Unbounded Inner Product Functional Encryption, with Succinct Keys
Presented at ACNS 2019.

EDUCATION

M.S. in Computer Science — **Carnegie Mellon University**
Sept 2018 – Dec 2019 — Pittsburgh, PA
Selected Coursework: Cryptography, Computer Security, Operating Systems, Machine Learning. — **CQPA: 3.95**

Diplôme d'Ingénieur polytechnicien — **Ecole polytechnique**
2014 – 2017 — Palaiseau, France
Mathematics and Computer Science program. — **GPA: 3.77**

TEACHING

Teaching Assistant for 15-440/15-640 Distributed Systems — **Carnegie Mellon University**
Spring 2019 & Fall 2019 — Pittsburgh, PA
Led a recitation, designed homework and exam questions, and held office hours.

SERVICE

- Additional reviewer: EUROCRYPT'21, ESORICS'19, SCN'18.

TECHNICAL AREAS

C, C++, Python, kernel security, firmware security, memory safety, cryptography.

LANGUAGES

French — Native speaker
English — Fluent