Ozgur Ural, Ph.D.

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Senior Software Engineer and Researcher | PhD in Secure & Distributed Machine Learning

Senior software engineer with 11 + years of experience delivering enterprise-scale systems and leading cross-functional teams in C++, Java, Scala, and modern web technologies. Completed a PhD (August 2025) in Secure & Distributed Machine Learning, focusing on proof-of-learning protocols, model watermarking, and large-scale distributed machine learning systems. Architected real-time simulators, led engineering teams of 14+, and consistently translated cutting-edge research into robust production solutions across cybersecurity, aerospace, and enterprise cloud environments.

TECHNICAL SKILLS

- **Languages:** C, C++, Java, Scala, Python, TypeScript/JavaScript
- **Distributed & Data:** gRPC/Protobuf, Redis, PostgreSQL, REST
- **Systems:** Linux, multithreading, networking, real-time/low-latency, backpressure
- **Web & UI:** Svelte, HTML, CSS/Tailwind
- **DevOps:** Docker, GitLab CI/CD, Jenkins, Git

EXPERIENCE

Avion Full Flight Simulators — Nieuw-Vennep, Netherlands
Senior Software Engineer — *October 2023 – Present*

- Developed real-time simulator software using C, C++, and Scala.
- Built a low-latency real-time simulation data pipeline to receive telemetry, normalize/aggregate and serialize to JSON/Protobuf, cache in Redis (hot path), persist in PostgreSQL (durable store), and serve the frontend via gRPC/HTTP; sustained ~50 GB/s real-time ingest with batching and bounded-queue backpressure to keep dashboards responsive.
- Built web applications for the Avion Cloud Environment to monitor, configure, and diagnose core simulator components using TypeScript/JavaScript (Svelte), Scala (backend services), Python, gRPC & Protocol Buffers, HTML, and CSS/Tailwind.
- Containerized and deployed services with Docker; implemented caching and storage with Redis and PostgreSQL; automated testing and deployments via GitLab CI/CD.
- Translated requirements and specifications into efficient solutions, rapidly prototyping complex systems.
- Incorporated multithreading and efficient I/O (sync/async where appropriate) with bounded-queue backpressure to meet rigorous real-time requirements.

Embry-Riddle Aeronautical University, Daytona Beach — Florida, USA
Graduate Research Assistant in Electrical Engineering and Computer Science — *August 2021 – August 2025*

- Thesis Advisor: Dr. Kenji Yoshigoe
- Dissertation: "Enhancing Proof-of-Learning Security Against Spoofing Attacks Using Model Watermarking"

Havelsan — Ankara, Turkey
Software Team Lead — *November 2020 – August 2021*

Havelsan DLP Data Leakage Prevention product.

- Technologies and tools used: C, C++, Java, Go, JavaScript, Qt, Sonar, Pardus, Windows, Git, Jira.
- Led a team of 14 engineers (developers, QA, DevOps, support).
- Developed and maintained key features of the endpoint agent, ensuring robust data protection.
- Coordinated with stakeholders to align project goals with business objectives, ensuring timely delivery.
- Provided mentorship and training to team members, fostering a collaborative work environment.

STM Defence Technologies — Ankara, Turkey
Expert Software Engineer — *February 2019 – November 2020*

Kargu Autonomous Rotary-Wing Attack UAV and Togan Autonomous Multi-Rotor Reconnaissance UAV.

- Technologies and tools used: C++11, Boost, Qt, QML, Google Test, Clang-Tidy, Ubuntu, Git.
- Contributed to the architecture and implementation of the mission-control unit, enhancing drone operational capabilities.
- Developed components of the ground-control unit using Qt and QML, ensuring effective communication and control.
- Designed and implemented Power-On and Continuous Built-In Tests to ensure system reliability and performance.
- Worked closely with cross-functional teams to align technical solutions with project requirements and military standards.

Comodo Cybersecurity — Ankara, Turkey
Expert Software Engineer — *July 2014 – February 2019*

Comodo Dome Secure Web Gateway, Comodo Patch Manager, and the Chromium-based web browser Comodo Dragon.

- Technologies and tools used: C++17, Boost, Qt, Git, Jira, Jenkins, WinAPI, Bitbucket, JavaScript, jQuery.
- Led the design and development of Windows services and applications to enhance functionality and reliability.
- Established unit testing and code-review protocols to ensure software quality.
- Pioneered the development of advanced browser features, enhancing user security and experience.
- Developed statistical reporting modules, providing product managers with insights for data-driven decision-making.
- Coordinated with cross-functional teams, including product management and QA.
- Implemented and maintained CI/CD pipelines using Jenkins.

EDUCATION

Embry-Riddle Aeronautical University, Daytona Beach — Florida, USA
Ph.D. in Electrical Engineering and Computer Science — *2021 – 2025 (conferred August 2025)*
- Dissertation: "Enhancing Proof-of-Learning Security Against Spoofing Attacks Using Model Watermarking"

Middle East Technical University (METU) — Ankara, Turkey
Master of Science in Cyber Security — *2015 – 2019*
- Thesis: Automatic Detection of Cyber Security Events from Turkish Twitter Stream and Turkish Newspaper Data

Middle East Technical University (METU) — Ankara, Turkey
Bachelor of Science in Computer Engineering — *2010 – 2014*
- Institutional note: METU is widely regarded as Turkey's leading engineering university and is ranked 269th globally (QS World University Rankings 2026).

Anadolu University — Eskişehir, Turkey (Distance/Online)
Bachelor of Business Administration — *2012 – 2017*

PUBLICATIONS

- Ural, O. (2025). Enhancing Proof-of-Learning Security Against Spoofing Attacks Using Model Watermarking. Doctoral dissertation, Embry-Riddle Aeronautical University, Daytona Beach, Florida.
- Ural, O. and Yoshigoe, K. (2025). Evaluation of Model Watermarking Techniques for Proof-of-Learning Security Against Spoofing Attacks. IEEE Access. Accepted, in press; DOI forthcoming.
- Ural, O. and Yoshigoe, K. (2024). Enhancing Security of Proof-of-Learning against Spoofing Attacks using Feature-Based Model Watermarking. IEEE Access. DOI: 10.1109/ACCESS.2024.3489776.
- Ural, O. and Yoshigoe, K. (2023). Survey on Blockchain-Enhanced Machine Learning. IEEE Access, pp. 145331–145362. DOI: 10.1109/ACCESS.2023.3344669.
- Ural, O. and Acartürk, C. (2021). Automatic Detection of Cyber Security Events from Turkish Twitter Stream and Newspaper Data. Proceedings of the 7th International Conference on Information Systems Security and Privacy (ICISSP), ISBN 978-989-758-491-6; ISSN 2184-4356, pp. 66–76. DOI: 10.5220/0010201600660076.
- Ural, Ozgur and Erdur, Efe. (2016). Secure Proxy on Cloud. DOI: 10.13140/RG.2.2.24058.08649.
- Ural, Ozgur (2014). Autonomous Cargo and Mail Delivery. Turkish Autonomous Robots Conference, Ankara, Turkey.
- **Peer reviewer (2022–present):** Reviewed 10+ manuscripts across machine learning and security venues, including IEEE Access.

AWARDS & HONORS

- The Scientific and Technological Research Council of Turkey (TÜBİTAK) National Project Competition – First Prize, June 2014.
- Middle East Technical University Graduation Projects Competition – Second Prize, June 2014.