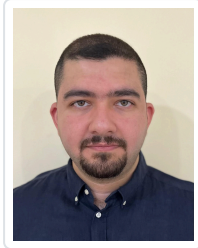

Ahmed Khalid

Bridging hardware and software with a passion for education and innovation.

PhD researcher in AI & NLP, experienced lecturer, and full-stack systems developer. From embedded microcontrollers to distributed cloud systems, I bring a deep technical foundation and a love for making complex topics engaging and practical.

LinkedIn: linkedin.com/in/ahmed-khalid-kadhim-3b228655

Google Scholar: scholar.google.com/citations?user=DeOHISIAAAAJ&hl=en

GitHub: github.com/akkadhim

University of Agder: uia.no/om-uia/ansatte/ahmedkk/

My portfolio site: ahmed.k.kadhim.me

What I Do

Embedded Systems & SoC Design

Design and prototype embedded systems using microcontrollers and FPGAs. Experienced in hardware/software co-design, including Linux-based SoC platforms.

Full-Stack Software Development

Build scalable applications across web, mobile, and desktop platforms using modern languages and frameworks like C# and Python

Server & Infrastructure Management

Led IT infrastructure development in academia and industry. Managed and secured university servers and contributed to national-level IT systems.

Research & AI Development

PhD researcher in Transparent AI and NLP, focusing on interpretable machine learning using the Tsetlin Machine. Member of the CAIR research group.

Academic Teaching & Supervision

Experienced university lecturer with a talent for simplifying complex topics. Taught courses like Distributed Systems, Computer Networks, Electronics, and Programming Labs.

Education

2023 - Present — University of Agder, Norway

Ph.D Fellow in Information and Technology

Focusing on Transparent AI, Natural Language Processing, and Machine Learning using the Tsetlin Machine. Part of the CAIR AI research group. Assisting in teaching Master's level courses in Distributed Systems and Advanced Internet Services.

2016 — Newcastle University, United Kingdom

MSc in Microelectronics

Gained deep expertise in microelectronics from transistor-level design to VLSI systems. Specialized in SoC with embedded programming. Received distinction.

2009 — Mustansiriyah University, Iraq

BSc in Electrical Engineering

Solid foundation in electrical circuits, digital logic, and embedded systems. Graduated with high standing. Later served as a laboratory instructor (2010–2014) focusing on microcontroller-based system design and digital electronics.

Research & Publications

AI with Tsetlin Machines

Focused on advancing the core understanding of Tsetlin Machines, this group investigates the algorithm's internal mechanics, explores novel approaches in natural language processing using the a logic-based and interpretable AI model and also highlighting practical implementations of the Tsetlin Machine in diverse domains.

- Omni TM-AE: A Scalable and Interpretable Embedding Model Using the Full Tsetlin Machine State Space
- Scalable Multi-phase Word Embedding Using Conjunctive Propositional Clauses
- Exploring State Space and Reasoning by Elimination in Tsetlin Machines
- Exploring Effects of Hyperdimensional Vectors for Tsetlin Machines
- Adversarial Attacks on AI-Generated Text Detection Models: A Token Probability-Based Approach Using Embeddings

Advanced Mechatronics & Intelligent Optimization

Innovative work in robotics and embedded control systems, focusing on autonomous navigation, real-time feedback, and biomimetic behavior for robotic platforms.

- Design of Path Planning Controller of Autonomous Wheeled Mobile Robot Based on Triple Pendulum Behaviour
- Design and Implementation of a Feedback Programmable Spin Coating System
- Particle Swarm Optimization Based Multilevel MRI Compression Using Compressive Sensing

Semiconductor Fabrication & Nanoelectronics

Research focused on advanced semiconductor materials and device engineering—bridging nanostructure fabrication with practical applications in photodetectors and Schottky-based devices. This aligns with my background in semiconductor fabrication and device design.

- Nanoflower ZnO thin-film grown by hydrothermal technique based Schottky diode
- Electrical and optical effects of Pd microplates embedded in ZnO thin film based MSM UV photodetectors: A comparative study
- Particle Swarm Optimization Based Multilevel MRI Compression Using Compressive Sensing

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Experience

2023 – Present University of Agder, Norway

Lecturer / Teaching Assistant

Teaching and assisting in Master's-level courses: Distributed Systems & Big Data, and Advanced Internet Services & Protocols. Also pursuing a PhD in Transparent AI and NLP using Tsetlin Machine.

2017 - 2023 Orient Telecom (acquired later by IQ Group), Iraq

R&D Manager (Previously System/Software Developer & Administrator)

Started as a backend and system developer, managing Linux-based infrastructure and building distributed solutions. Over time, I designed and developed multiple platforms and services for the company, including Android and iOS applications. In the last three years, I led the R&D department, where I focused on building smart tools, optimizing internal systems, and supervising a team of developers to deliver reliable, scalable tech solutions across different platforms.

2016 – 2023 Faculty of Enginnering , Mustansiriyah University, Iraq

Lecturer & IT Center Manager

Served as a lecturer in the Faculty of Engineering, teaching courses related to semiconductor physics, electronics, embedded systems, computer networks and many programming languages. I guided students through hands-on learning and research-driven projects while actively contributing to academic program development. In 2018, I was appointed IT Center Manager, overseeing the digital infrastructure, network administration, and technical support across the faculty. I led modernization initiatives, implemented system upgrades, and improved campus-wide digital services.

2010 – 2014 Faculty of Enginnering , Mustansiriyah University, Iraq

Laboratory Instructor (Teaching Assistant)

Led laboratory sessions on microcontroller-based system design, digital electronics, and embedded systems. Supported student learning through hands-on training and system simulation.

2010 – 2011 AlGhodwa Group, Iraq

Electrical Maintenance Engineer

Programmed on-board IC processors for heavy machinery including excavators, loaders, and trucks. Conducted advanced electrical testing and diagnostics on control systems and components.

Hardware Skills

Microcontrollers & Embedded Systems (AVR, ARM Cortex-M, ESP32, Arduino-based platforms)

100%

FPGA Development & HDL Design (VHDL, Verilog, Xilinx/Intel FPGAs)

75%

ECAD / TCAD & Simulation Tools (Cadence, Synopsys Sentaurus, Silvaco Atlas, KiCAD, Proteus)

60%

Digital Systems & Logic Design (FSMs, clocking, memory/ALU design)

95%

Coding Skills

Low-Level Programming (Assembly, Machine Code)

70%

System-Level Languages (C, C++)

85%

High-Level Languages (Python, Java, C#, Swift, Kotlin, JavaScript, VB.NET)

95%

Scripting & Special-Purpose Languages (SQL, NoSQL, MATLAB, Bash, PowerShell)

90%

IT Skills

Networking & Protocols (CCNA, CCNP)

90%

DevOps & Automation (CI/CD, Azure DevOps, GitHub Actions, Open Source Tooling)

80%

Systems & Infrastructure (Linux, Windows Server, Docker, Hyper-V, KVM)

95%

Version Control & Agile Management (Git, GitHub, Jira, Confluence, Trello)

95%

Monitoring & Logging Systems (Grafana, Zabbix, PRTG, Graylog)

85%

Storage & Data Management (FreeNAS, Windows Server Storage, RAID)

70%

Platforms & System Skills

.NET & .NET Core Application Development (Web, Desktop, Console Apps)

100%

Native Mobile Application Development (Xcode for iOS, Android Studio for Android)

75%

Server Management & Virtualization Platforms (WHM/cPanel, Windows Admin Center, VMware vCenter)

90%

Testimonials

A uniquely stands out person that I have taught and worked with. During our time together, Ahmed displayed great talents in electronics, technical applications, hardware, and software.

Ghusoon M. Ali
Professor at Mustansiriyah University

I am grateful to have you on the team and amazed by your achievements in natural language understanding with Tsetlin machines.

Ole-Christoffer Granmo
Professor and the Founding Director of CAIR at the University of Agder

The extent of study exceeds the expectations to this coursework. I see evidence of ability to connect different aspects of learning and experience in a creative way. It is one of the best examples of work throughout years.

Alex Bystrov
CAD Module Supervisor, Newcastle University

You have demonstrated exceptional technical skills, creativity, and an unwavering commitment to excellence. Your willingness to take on new challenges and go the extra mile to ensure project success has been inspiring and highly appreciated by our team.

Mohammad Karim
CTO, Orient Telecom, Iraq

More information can be provided upon request. Please feel free to contact me on My Website (ahmed.k.kadhim.me), email or through my social media profiles.