

Alaa Kalach

AI and Software Developer

Beirut, Lebanon | alaa.kalach@gmail.com | +961 81 068 481 | <http://linkedin.com/in/alaa-kalach-999a7a319>

Passionate and motivated developer with a strong interest in artificial intelligence, data analysis, and software engineering. Strong analytical and problem-solving mindset, eager to build intelligent and impactful solutions.

Professional Experience

Computer Science Teaching Assistant | *American University of Beirut (AUB)* **September 2025 - Present**

- Assisted in delivering course material by supporting lab sessions, tutorials, and assessments.
- Provided academic support through grading, feedback, and one-on-one guidance to enhance students' understanding.

AI Engineering Intern | *EDM – Software Solution* **July 2025 - August 2025**

- Designed and implemented workflows using n8n, combining automation, custom logic, and API integration.
- Applied prompt engineering and data preprocessing to optimize model performance and ensure reliable AI outputs.

Machine Learning Instructor | *Vtec Training* **July 2025 - August 2025**

- Taught Python for Machine Learning course, covering core programming concepts, data manipulation, and libraries.
- Guided students through model training, evaluation, and experimentation with classification and regression algorithms.

Frontend Developer | *Beirut Arab University (BAU)* **September 2024 - June 2025**

- Collaborated with the Faculty of Medicine to develop a responsive assessment tool for supervisors and trainees.
- Integrated a modern user interface with streamlined features, ensuring real-time feedback and ease of use.

Web Development Intern | *SecuFleet* **June 2024 - September 2024**

- Developed responsive web interfaces for fleet management systems, enhancing usability and performance.
- Collaborated with developers to implement and enhance features, improving system functionality and user experience.

Volunteer Experience

Semicolon Academy Ambassador at BAU | *Semicolon Academy* **October 2024 - July 2025**

- Actively participated in meetups and technical discussions while assisting in organizing workshops and events.
- Promoted cybersecurity awareness by guiding students on safe practices and responsible behaviors.

LCPC Club Representative | *Beirut Arab University (BAU)* **June 2023 - September 2024**

- Elected as club representative, facilitating communication and encouraging member participation.
- Supported problem-solving sessions and competed in the 2023 LCPC competition, tackling algorithmic challenges.

Skills

- Soft Skills:** problem-solving, analytical thinking, communication, teamwork, organization, and time-management.
- Technical Skills:** Java, Python, C++, C#, JavaScript, n8n, workflow automation, FastAPI, Postman, MongoDB, SQL, SPARQL, HTML/CSS, React.js, Flutter, RDF/OWL, and Git/GitHub.
- Languages:** English and Arabic.

Education

- Master of Science in Computer Science** | *American University of Beirut* **2025 - Present**
- Bachelor of Science in Computer Science** | *Beirut Arab University* **2022 - 2025**
- Lebanese Baccalaureate - General Science** | *Al-Bayader School Aramoun* **2007 - 2022**

Projects

- **Reward Sensitivity in RL** - Studied how different reward designs impact PPO, DQN, and A2C on MountainCar-v0, finding that reward-algorithm compatibility is a stronger performance factor than algorithm or reward choice alone.
- **CNN-Based Waste Classification System** - Built a CNN-based model to classify waste types, addressing improper waste disposal in Lebanon through applied machine learning.
- **Smart Nurse** - Developed an AI-driven system using agents, RAG pipelines, and automation to assess nurse interactions with elderly patients, supporting cognitive health monitoring and improving care practices.
- **Emotion Recognition System** - Implemented a real-time emotion detection pipeline with OpenCV and DeepFace to detect and monitor emotions in video frames.
- **Chatty, The Secure Messenger Application** - Designed and implemented a secure messaging application based on cryptographic principles, focusing on secure communication and system design.
- **BAU Medical e-Portfolio** - Developed a responsive portfolio system for medical trainees, enabling real-time supervisor feedback, dynamic evaluations, and structured progress tracking.
- **Bookshop System** - Implemented a Java-based program using several data structures, in order to manage book categorization and improve user experience.
- **Sustainable Farm Ontology** - Constructed a Semantic Web ontology using RDF, OWL, and SPARQL to model and process sustainable farming data, enabling semantic querying and knowledge inference.
- **Lands' Organizer** - Created an object-oriented program to assist landowners in organizing, visualizing, and modifying land plots based on user-defined preferences and conditions.

Certifications and Awards

- **2nd Place Award** - Senior Projects Competition at BAU
- **4th Place Dean's List Ranking** - Department of Computer Science for 2 Semesters
- **1st Place Award** - SciMix Competition at BAU
- **Certificate of Participation** - LCPC 2023
- **Offensive Cybersecurity Bootcamp** - Semicolon Academy
- **Techsplore Advanced Track Program** - AUB

Reference

Dr. Aya Kayal

Assistant Professor of Computer Science at American University of Beirut | ak29@aub.edu.lb

Dr. Mohammed Al Saleh

Assistant Professor of Computer Science at Beirut Arab University | mhdalsaleh@bau.edu.lb