

RONNIE SABA

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EDUCATION

American University of Beirut, BE in Computer Science and Engineering | GPA: 3.8/4.0 08/23 – 05/27 (Expected)
Coursework: Data Structures & Algorithm Analysis, Object-Oriented Design, Operating Systems, Computer Architecture, Machine Learning & Production, Computer Systems and Networks, Cryptography & Network Security, Ethical Hacking, Software Engineering

EXPERIENCE

Virtually Integrated Project, ML-Based OECT Cancer Cell Detection, *Undergraduate Researcher, AUB* 09/25 – Present

- Designing and simulating an AI-integrated Organic Electrochemical Transistor (OECT) to generate impedance data for tumor detection
- Developing equivalent-circuit models to extract cell parameters and derive machine-learning features from impedance spectra
- Implementing machine-learning pipelines for supervised classification of healthy versus cancerous cells

AUB Honor Society, Developer Team Lead 06/25 – Present

- Leading a 3-member team to deploy a responsive website serving 1600+ users
- Ensuring a smooth frontend–backend integration, scalability, and long-term maintainability

PROJECTS

Veritas, Misinformation Detection Platform – HTML/CSS, JS, PyTorch, Flask API 09/25 – 12/25

- Built a full-stack web platform that detects and flags misinformation in real time across Lebanese media sources
- Developed an NLP/ML pipeline using NER, semantic similarity, and event extraction to decompose news into verifiable atomic claims
- Designed a cross-source comparison engine with sentiment and stance analysis to expose contradictions, bias, and manipulation

Research Project, Enhancing Explainable Concept Drift for HVAC Cyber Attacks — Python, PyTorch 09/25 – 12/25

- Researched and implemented architectural enhancements to an existing CNN-autoencoder pipeline for feature-level drift localization (identifying drifted features) in multivariate time-series data
- Demonstrated increasing the temporal kernel size from 1 to 3 improved detection accuracy under complex drift scenarios by 80%
- Mitigated feature-correlation noise by expanding the latent encoding space and augmenting AE loss with a correlation penalty loss

Optimizing a Pipelined Datapath for GRAND – RISC-V Assembly 01/25 – 05/25

- Simulated multi-stage pipeline for the GRAND algorithm, an error-correcting decoder, and optimized instruction-level parallelism
- Achieved a 1.28× performance speedup over a non-pipelined model through efficient stage balancing and optimization

AUBoutique, Online Boutique Platform – Python, PyQt, SQLite 09/24 – 12/24

- Developed a full-stack e-commerce simulation with product listing, search, purchases, star ratings, and multi-currency support
- Engineered a custom application layer that routes server messages to dedicated server threads, ensuring safe concurrent communication in a multi-user socket environment

EXTRACURRICULARS

ML Hackathon, Machine Learning Crop Recommender (12 hours) - scikit-learn 10/25

- Engineered a real-time crop recommendation platform that integrates soil, weather, and fertilizer data
- Developed a two-stage ML pipeline (Random Forest + Linear Regression) achieving 93% yield prediction accuracy

Capture The Flag – Kali Linux 10/25

- Solved multiple CTF scenarios through network scanning and service enumeration, server-side/web/database vulnerability exploitation (including SQL injection), privilege escalation (SUID, kernel exploits), and targeted network forensics
- Applied Nmap/NSE, Wireshark and net discover, Burp Suite, Metasploit, and Hydra to map and exploit target systems

SKILLS

Programming: Python, C++, Java, HTML, CSS, JavaScript

Systems & Tools: Flask, React, WordPress, SQL (SQLite, PostgreSQL), Docker, Git/GitHub, Linux, Bash, Wireshark, GNS3

Data & ML: PyTorch, scikit-learn, Transformers, pandas, NumPy, matplotlib, seaborn, MATLAB, Signal Processing

Languages: English (Fluent), Arabic (Fluent), French (Conversational)