Ali Elsabbouri

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EDUCATION

Wayne State University **Detroit, MI**
Bachelor of Science in Computer Science *Expected Dec 2025*

- GPA: 3.93/4.0
- Courses: Data Structures and Algorithms, Computer Organization, Programming Languages, Computer Security, Software Engineering, Web Systems, User Interface, Operating System, App Development for Entrepreneurs, Embedded Systems, Machine Learning, Deep Learning, Intro to AI.

EXPERIENCE

SMOOTH INVESTMENT – WAYNE STATE UNIVERSITY - Website **Detroit, MI**
Senior Capstone *Sep 2025-Dec 2025*

- Led a 4-member team to design and build Smooth Investment, an AI-powered stock analysis platform using React/TypeScript, Flask, and PostgreSQL. Integrated yfinance for market data, Finnhub for IPO information, and developed tools for IPO comparison using Euclidean algorithm to analyze volume and fundamentals.
- Built evaluation systems that assess a company's profitability, revenue, debt, and margins to generate investment-readiness scores, implemented an AI chatbot using Gemini LLM to answer finance-related questions, and added crypto insights page for users to analyze cryptocurrency performance and trends.
- Developed secure REST APIs, managed a PostgreSQL/Neon database, and implemented a universal LSTM supporting the AI backend.

CHESS GAME – INDEPENDENT PROJECT - GitHub **Detroit, MI**
Software Developer *September 2024*

- Designed and developed a full Python chess game using Pygame, applying object-oriented programming to build modular classes for the board, pieces, rules, and input handling, ensuring a maintainable and scalable structure.
- Created a custom game engine that enforces all chess mechanics—legal moves, check, checkmate, stalemate, castling, and pawn promotion—supporting two-player gameplay on the same device for local matches.
- Implemented an interactive graphical interface with real-time visual feedback and added LAN hosting functionality using Socket and Threading, enabling players to connect and compete across the same local network with smooth performance.

IMAGE DENOISING – WAYNE STATE UNIVERSITY - GitHub **Detroit, MI**
Deep Learning Engineer *Jan 2025-May 2025*

- Built and trained a U-Net convolutional neural network in PyTorch for image denoising using the DIV2K high-resolution dataset, generating noisy–clean image pairs with progressively reduced Gaussian noise through curriculum-style training to improve learning stability and performance.
- Implemented a hybrid loss function combining MSE and SSIM for perceptual quality optimization, achieving clear visual reconstruction and robust generalization; automated model saving, validation, and inference to produce denoised outputs from unseen images.

DISTANCE DETECTION SYSTEM **Warren, MI**
Embedded Systems Engineer *July 2024*

- Engineered an Arduino-based ultrasonic distance measurement system using the HC-SR04 sensor, integrating real-time signal processing, serial data monitoring, and precise timing control through pulse-echo measurement and interrupt-driven logic; optimized power efficiency and accuracy via custom calibration and implemented modular C++ code for scalable integration into future IoT and robotics applications.

SKILLS

- **Experienced:** Python, C, C++, Java, Swift, TypeScript, JavaScript, SQL, HTML, CSS, REST APIs, Flask, Jinja2, Go, React, Vue, GCC, GDB, Vim, Cron, Networking
- **Software & Tools:** Docker, Linux, Git, Visual Studio, VS Code, Xcode, Unity, Arduino, Render, Vercel, Neon, AWS Cloud, PostgreSQL, Ansible, RabbitMQ
- **Implemented**: Computer Vision, Machine Learning, Postfix Calculator, Euchre, Backtracking Puzzle, Graph Search Algorithms, AVL Tree, Priority Queues, Pairing Heap, MapReduce