MAHMOUD ZOUROB

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EDUCATION

University of Ottawa   Ottawa, ON
Bachelor of Computer Engineering: **Graduating April 2027**
Coursework: Computer Architecture; Digital Systems ; Signal and System Analysis; Computer Systems Design; Principles and Applications of VLSI Design; Data Communications and Networking

EXPERIENCE

EcoSafeSense – Solar Charge Controller Configuration Engineer   Jan 26' – Present
- Improved solar charging efficiency by **30%** using a **TI BQ25798** buck-boost charger with integrated **MPPT** and NVDC power-path control.
- Configured charger operation via $\textbf{I}^2\textbf{C}$ **register tuning** and validated performance using bench PSU testing and real-time V/I power measurements.
- Built firmware-ready battery charge profiles using measured system load data (**157 mW baseline**) for reliable cold-weather embedded operation.

National Research Council – Automation Engineer Intern   May 25' – Aug 25'
- Implemented hardware process control for DIW electrode fabrication using **Hyrel 30M**, **Repetrel**, and **PrusaSlicer**, tuning deposition parameters for repeatable electrochemical performance.
- Built data-driven optimization pipelines using **Python/MATLAB** to process electrochemical test data and model microstructure–performance relationships.
- Performed hardware validation using battery cyclers and potentiostat instrumentation, achieving $\textbf{125 mAh/cm}^2$ LMNO half-cell performance with reduced electrolyte overhead.

PROJECTS

UART Design | *ASM, FSM design, VHDL, Digital Systems, RTL Design*
- Won 1st place for developing a full-stack web application that simplifies group meal planning and coordination
- Implemented restaurant discovery, availability matching, auto scheduling using YellowCake API and Gemini API

PlayVer - Community Sports Platform | *TypeScript, Next.js, Tailwind, Prisma, Vercel*
- Built a pro bono sports-meetup platform helping locals organize sports sessions, currently serving **40+** users
- Co-Developed backend using **Next.js** and **PostgresSQL** to manage user data and send emails, hosted on **Vercel**

Crypto Price Alerting Service | *AWS Lambda, API Gateway, DynamoDB, SNS*
- Built a serverless app that monitors cryptocurrency prices and triggers real-time alerts when user targets are hit
- Engineered the backend using **AWS Lambda**, **DynamoDB** for rule storage, and **SNS** for SMS notifications

TECHNICAL SKILLS

Languages: Python, Java, C++, SystemVerilog (UVM), HTML/CSS, JavaScript, TypeScript
Frameworks: React.js, Vue.js, Next.js, Node.js, Express.js, Django, Spring, Shadcn/Radix UI, JUnit, Bitbucket
Developer Tools: Docker, AWS, Git, Linux, PostgreSQL, MongoDB, Azure DevOps, Azure Databricks, PySpark, CI/CD