MAI KASSEM

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Recent **Computer Science (AI Pathway) graduate** with a strong focus on **embedded systems, audio technology, and software development**. I design and build custom audio hardware and software solutions — from **DIY MIDI controllers** to audio signal processing systems. My projects blend **C++, embedded development, and digital audio concepts**. I'm hands-on, self-driven, and constantly learning.

EDUCATION

2011-2016

HELWAN UNIVERSITY

FACULTY OF MUSIC EDUCATION (GUITAR PERFORMANCE AND MUSIC THEORY COURSE)

- Reached Trinity Grade 6 in Guitar
- Trained in Music theory and performance

2021-2024

UNIVERSITY OF THE WEST OF ENGLAND

BACHELOR OF SCIENCE IN COMPUTER SCIENCE (ARTIFICIAL INTELLIGENCE PATHWAY)

- Upper Second-Class Honour **(2:1)**

- **Key Modules & Focus Areas:**
    - Embedded Systems & C++
    - Machine Learning & Predictive Models
    - Web Development

- **Dissertation:** Arduino-Based DIY MIDI Controller

SKILLS

Technical Skills

Programming & Development:

- **Languages:** C++, Python, JavaScript, HTML/CSS, Kotlin
- **Embedded Systems & Hardware:** Arduino, Circuit Design, Prototype and final product design, Microcontroller Programming
Programming
- **Testing & Integration:** Unit Testing, Debugging, Hardware/Software Integration
- **Development Tools:** VSCode, Jupyter, Linux, Docker
- **Software Development:** Object-Oriented Programming (OOP), Data Structures, Algorithms, Agile methodologies
- **Version Control:** Git, GitHub, GitLab
- **Database:** MySQL, SQLite3, NoSQL

Audio & Music Technology:

- **Embedded Audio Systems:** MIDI & Synth Development
- **MIDI Protocols & Controllers:** Firmware Development, Signal Processing
- **Digital Audio Basics:** Oscillators, Filters
- **Music Production Software:** Logic Pro X, Ableton Live

Soft Skills

- **Problem-Solving & Debugging:** Experienced in troubleshooting software & hardware issues
- **Time Management & Adaptability:** Successfully managed multiple projects
- **Self-Learning:** Actively learning new technologies

PROJECT HIGHLIGHTS

DIY MIDI Controller (Arduino-Based) Design & Implementation

• Designed and built a **MIDI controller** with different functionalities using **Arduino**, integrating hardware components and firmware.
• Developed **custom C++ firmware** to process user input and generate **MIDI signals**.
• Applied **circuit design** principles for optimal sensor and button response.
• Conducted software and hardware testing to ensure accurate and reliable MIDI output.

DIY Synthesizer Controller: Design & Implementation (on-going)

• Developing a **custom digital synthesizer** using **Arduino and digital audio processing techniques**.
• Designing **firmware for sound synthesis, waveform generation, and real-time audio processing**.
• Exploring **embedded audio development**, including **oscillators, filters, and signal modulation**.