

# MAI KASSEM

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I am a recent **Computer Science (AI Pathway)** graduate with a passion for **audio technology, software development, and electronics**. My dissertation focused on designing a **DIY MIDI controller**, integrating **hardware, software, and MIDI principles**.

My bachelor's degree helped me become more skilled in **C++, Python, and embedded systems**, with hands-on experience in **software development, testing, debugging, and hardware integration**. I am also actively learning **music technology and digital audio processing** through personal projects and research.

## EDUCATION

2011-2016



HELWAN UNIVERSITY

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

This was a course where I learned music theory basics and progressed in Guitar until I reached trinity grade 6

2021-2024



BACHELOR OF SCIENCE IN COMPUTER SCIENCE  
(ARTIFICIAL INTELLIGENCE PATHWAY)

UNIVERSITY OF THE WEST OF ENGLAND

Upper Second-Class Honors (2:1)

**Focus Area:** AI prediction models, C++, Embedded systems, web development.

## 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
- **Software Testing:** 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** (Arduino-based MIDI & Synth Development)
- **MIDI Protocols & Controllers** (Firmware Development, Signal Processing)
- **Music Production Software** (Logic Pro X, Ableton Live)

### Soft Skills

- **Problem-Solving & Debugging** – Experienced in troubleshooting software & hardware issues Project Management & Time Management
- **Time Management & Adaptability** – Successfully managed multiple projects while studying
- **Self-Learning** – Actively learning new technologies in **audio and music technology**

## PROJECTS

### 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**.