# YOUSSEF MOUSSALLEM

## Education

**American University of Beirut (AUB)** Beirut, Lebanon
*Bachelor of Engineering in Computer and Communication Engineering* Expected: May 2025
Concentration: **Software Engineering & Artificial Intelligence**

## Technical Skills

**Programming:** Python, C#, JavaScript, C++, SQL, Java

**Web Technologies:** React, Vite, Node.js, Flask, React Native, ASP.NET Core

**AI/ML:** TensorFlow, Keras, Pandas, NumPy, Scikit-learn, Model Training

**Databases:** SQL, SQL Server, Firebase Firestore Database

**Tools & Platforms:** Git, Firebase (Auth, Hosting), Revit API, prior experience with OpenGL, Visual Studio, VS Code, prior experience with gRPC

**Concepts:** OOP, REST APIs, Agile Methodologies, Responsive Design, Data Structures, Algorithms

## Experience

**BIM-ME** (2024 – Present)
*BIM Software Developer*

**Revit Plugin Development:**

- **Panel Grid Automation:**
  - Developed a sophisticated Revit plugin to automate custom panel grid generation.
  - Integrated an algorithm that detects and adjusts panel openings and applies corrections with a single customized click.
  - Supported diverse geometric shapes—such as arcs, ellipses, splines, etc.—enabling dynamic configuration.
  - Implemented advanced border and corner panel detection to achieve precise layout generation.
- **Dimension Automation:**
  - Automated the annotation of dimensions to significantly reduce manual drafting efforts.
  - Streamlined the placement of dimension lines, ensuring high accuracy and consistency in documentation.
  - Developed a backend to seamlessly manage user and subscription data, integrating with the automation features.

- *Technologies:* C#, Revit API, Node.js, and Firebase.

**Image Generation System with Stable Diffusion (like Veras):**

- Developed an internal software solution that leverages **Stable Diffusion** for advanced image generation.
- Engineered a client–server architecture featuring a central server coordinating a dedicated Stable Diffusion handler, capable of processing multiple concurrent client requests.
- **Integrated the service with Revit through Revit API, C#, and ASP.Net, enabling on-demand image generation directly within the BIM environment for enhanced design workflows.**
- Utilized gRPC to efficiently manage communications and ensure rapid, on-demand, high-quality image synthesis.
- *Technologies:* C#, Python, ASP.NET, gRPC, React, Firebase, and SQL Server.

**Custom Timesheet & Project Management Solution:**

- Designed and developed a custom timesheet system and project management solution tailored for employees and employers.
- Leveraged ASP.NET, React, and Firebase to deliver a robust and user-friendly application.

## Project Experience

**Chaleyet.com - Full Stack Web Platform** Personal Project (2023 – Present)
*Developed an online chalet booking platform from concept to deployment.*

- Engineered using React/Vite for the frontend and Flask for the backend.
- Implemented user authentication, search/filtering, and booking management.
- Designed a Firestore database and deployed the application on Firebase.
- *Technologies:* React, Vite, Flask, Firebase.

**Interactive 3D Scene Rendering** C++ / OpenGL (2023)
*Developed a real-time 3D graphics application to demonstrate core graphics principles.*

- Implemented object loading, transformations, perspective projection, and dynamic camera control via the OpenGL API.
- Applied basic lighting and shading techniques using GLSL shaders.
- *Technologies:* C++, OpenGL, GLSL.

**Applied Machine Learning Implementations** Python / TensorFlow (Spring 2025 – Present)
*Built and evaluated ML models as part of academic coursework at AUB.*

- Processed data acquisition, cleaning, and preprocessing using Pandas and NumPy.
- Designed and trained various Neural Networks (ANN, CNN, RNN/LSTM) with TensorFlow/Keras.
- Evaluated model performance using standard ML metrics.
- *Technologies:* Python, TensorFlow, Keras, Pandas, NumPy, Scikit-learn.

**Hospital Management System** University Project (2022)
*Developed a hospital management system application for university students at NDU using C# and Visual Studio WinForms.*

- Leveraged Object-Oriented Programming (OOP) techniques to build a modular, maintainable system.
- Implemented user authentication and user management by storing user information in files instead of a database, in line with the students' current knowledge level.
- Utilized file processing as a database alternative due to time constraints.
- *Technologies:* C#, Visual Studio, WinForms.

## Languages

**Arabic:** Native **English:** Professional Proficiency **French:** Professional Proficiency

## Interests

Passionate about the convergence of artificial intelligence with digital design, I actively explore AI applications in enhancing 3D visualization, BIM and CAD automation, and digital engineering processes. I follow advances in deep learning that streamline workflow efficiencies and innovate in architecture, construction management, and design optimization.