Luna Salameh

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MSc student with a strong background in biomedical engineering, 3D image processing, and machine learning. Experienced in developing robotic systems and real-time localization systems. Proficient in Python, MATLAB, and C++, with practical knowledge of medical imaging and simulation tools. Passionate about contributing to the development of personalized healthcare solutions.

Education

Télécom Physique, Université de Strasbourg **2023 – 2025**
Optique, Image, Vision, Multimédia: HealthThech Master Program *France*
Minors: AI ; Computer Vision ; Modeling & Simulation

Higher Institute for Applied Science and Technology **2018 – 2023**
Bachelor of Science in Electronic Systems Engineering *Syria*
Minors: Control Systems, Signal Processing, Robotics

Projects

Multi-Localization System for a Digital Twin of a Hospital Emergency Department **Feb 2025 – Ongoing**

- Developed real-time indoor localization system using UWB and other technologies.
- Investigated positioning algorithms: trilateration, multilateration, fingerprinting.
- Python, IoT, ML.

Heterogeneous Single Particle Reconstruction **May 2024 – Aug 2024**

- Contributed to research on 3D fluorescence microscopy reconstruction using deep learning.
- Implemented encoder-decoder architectures and evaluated shape modeling for biological structures.
- Tools: Python, PyTorch.

Low-Cost Training System for Pre-Op / Intra-Op Registration **Feb 2024 – May 2024**

- Designed a medical training setup using low-cost hardware and 3D printed components
- Developed system for neurosurgery/orthopedic registration with webcam-based imaging
- Implemented pose estimation and tracking algorithms for object-marker registration
- Python, OpenCV, 3D Printing, MATLAB

Medical robotic registration **Jan 2024 – Feb 2024**

- Designed a triangulation-based system for robotic-assisted surgical puncture.
- Developed pose estimation and robotic control algorithms in MATLAB.

AI-Based Wearable System for Foot Movement Classification **Feb 2023 – Aug 2023**

- Designed and implemented AI algorithms for IMU-based movement classification.
- Achieved 97% precision using classical ML models; implemented CNN models.
- Python, PyTorch, TensorFlow.

IMU Signal Acquisition and Knee Behavior Analysis **Jun 2022 – Aug 2022**

- Analyzed knee and hip joint behavior during walking using dual IMU sensors
- Modeled signal noise and optimized signal processing for joint angle tracking using KalmanFilter
- MATLAB, Arduino, Simulink

Stepper Motor Speed Controller Circuit **Jan 2022 – Apr 2022**

- Designed and built a speed controller circuit for a stepper motor using a potentiometer
- Enabled direction control via SPDT switch; simulated with PSpice and implemented hardware
- PSpice, Electronics Lab Work, H-bridge

Skills

Those skills are earned through internships and lab sessions in the courses.

Medical Imaging MRI, OCT, Image Registration, Segmentation
3D Modeling Statistical Shape Modeling, Geometric Modeling, Mesh Processing
Biomechanics Finite Element Methods (Intro), Soft Tissue Modeling
Machine Learning Python, PyTorch, TensorFlow, Keras
Scientific Programming Python, C++, MATLAB
Robotics ROS, ROS2, Simulink
Design & Simulation SolidWorks, Autodesk Inventor, PSpice, AutoCAD, 3D Slicer
Embedded Systems PLC, FPGA

Languages

English C1

French A2

Awards

World Robot Olympiad **Nov 2019**
VIII. Place Award, Regular Senior Category *Hungary*

Additional Information

- Experience working with international and multidisciplinary teams.
- Passion for applying digital twin concepts to personalized medicine.
- Proactive, autonomous, and committed to high-quality research.

Volunteering

Little IT Engineer Magazine **Apr 2022 – Jun 2022**
Academic Writer

National Robot Olympiad **Jul 2021 – Jul 2022**
Head Coach Senior Category

National Robot Olympiad **Aug 2021 – Sep 2021**
Elementary Judge

AL-Wataniah Syrian National School **Jan 2021 – Apr 2021**
Robotics Tutor

International Collegiate Programming Contest **Jan 2021**
Volunteered Staff