# Hashem [redacted]

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## EDUCATION

**Some University in the Arab World**
**Bachelor of Engineering** **2020s**
**Cumulative GPA**: **3.94/4.00**
**Relevant Coursework:** Antennas and Propagation, Control Systems, Wireless Communication Systems, Satellite Communications, Digital Communications, Communication Electronics, Microprocessor Systems, Electronics 3, DSP.

## HIGHLIGHTED PROJECTS

**Enhancing Wireless Communication Using Intelligent Reflective Surfaces (IRS)** **2020s**

- Developed a comprehensive IRS-based passive beamforming solution to steer electromagnetic waves, boosting signal strength by 11 dB and ensuring stable coverage across varied scenarios, then further enhanced by active beamforming techniques.
- Built a 3D model of The University campus and conducted MATLAB simulations on it for various practical scenarios.
- Executed CST designs and simulations for both unit cell and IRS array configurations, followed by designing and building the physical prototype using EasyEDA for PCB design, which was then manufactured and shipped from JLCPCB in China.

**Multi-Person Pose Estimation** **2020s**

- Engineered an advanced multi-person pose estimation system, integrating YOLOv8 for robust real-time detection and analysis. Utilized pre-trained models and fine-tuning scripts, significantly enhancing surveillance and interactive applications.

**Cold War Spies and Wi-Fi: Soviet Satellites Over America and Starlink in Irbid** **2020s**

- Designed and simulated a Starlink satellite network to provide internet coverage to my house in Irbid, Jordan, utilizing 10 satellites in the Starlink constellation.
- Evaluated communication link performance (access times, BER, SNR, C/N) and removed satellite interference with advanced filtering improving BER+I from $9.00 \times 10^{-2}$ *to* $1.00 \times 10^{-30}$.
- Demonstrated Molniya orbit satellite's 16+ hour daily coverage of Washington, D.C., for Cold War surveillance potential.

**Advanced Communication Techniques: A Practical Approach** **2020s**

- Designed and implemented AM audio transmission using GNU Radio, 64-QAM modulation and demodulation using Simulink, and Huffman source coding algorithm using MATLAB.
- Analyzed system performance under varying conditions, including SNR variations and BER calculations, demonstrating effective transmission, modulation, and source coding techniques.

## ACHIEVMENTS

- **Undergraduates Research & Innovation Support Program:** Received funding support from the King Abdullah II Fund for Development (KAFD) for the project titled "Swarm UAVs with Wireless Charging Stations for Surveillance," awarded up to 5000 JOD.
- **AIDTSEC Conference**: Exhibited a machine learning project at the AIDTSEC conference in 2021, showcasing advancements in anomaly detection for industrial control systems. Project Poster. Conference Exhibitor Badge.

## ACTIVITIES

- **Participation in Shamal Start Mobile FabLab:** Engaged in a digital fabrication workshop series, acquiring hands-on skills in electronic design, programming, PCB milling, and general lab techniques such as soldering. Sample Workshop.

## TECHNICAL SKILLS

- **Simulation and Design Tools:** MATLAB, Simulink, ANSYS Electronics, CST Studio Suite, Keysight ADS, GNU Radio, PSpice, Satellite Tool Kit (STK), EasyEDA.
- **Computer Vision:** proficient in TensorFlow and OpenCV for object detection, tracking, and real-time image processing tasks.
- **Programming Languages:** Python, C++, C#, Assembly, and MATLAB.
- **Embedded Systems & Microprocessor Programming:** Proficient in Arduino, ESP32, and various modules including NRF24L01+; experienced with 8086/8088 microprocessors and 8255 PPI interfacing.

## CERTIFICATIONS

- **Certified in over 15 courses:** focused on computer vision, machine learning, mathematics, and programming, and actively pursuing additional certifications exclusively in RF engineering and robotics.
- **Details and Documentation:** For a complete updated list and documentation of all certifications, visit my Certificates Repository.

## ADDITIONAL

- **Languages:** Advanced in Arabic and English.
- **Work experience:** will be provided when I deem necessary and appropriate for some of it is confidential, and including some but not all implies a deficit one doesn't suffer.
- **Last updated:** June 2024. This is customized for an RF engineer position. Others I have but care not for at the moment.