

Aveen Hussein

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EDUCATION

ITMO University

Saint Petersburg, Russia

Candidate for a Master's in System and Applied Software Engineering

June 2026 (expected)

- **Thesis Topic:** Gamification of Urban Planning for Traffic Simulation and Prediction with Professor Ivan Perl.
- **Relevant Coursework:** Multi-level organization of software, System Software, DevOps, Architecture of high-load applications.

Higher Institute of Applied Sciences and Technology

Damascus, Syria

B.Eng. in Software Engineering and Intelligent Systems

October 2019 – June 2023

- **Relevant Coursework:** Machine Learning, Natural Language Processing, Computer Vision, Computer graphics.

ACADEMIC EXPERIENCE

Institute of Laser Technology (ILT ITMO)

Saint Petersburg, Russia

Computer Vision Engineer (Internship)

Oct. 2024 – Jan. 2025

- Instance segmentation using Yolov8 training.
- Stable diffusion for synthetic image generation to use for dataset augmentation.

Graduate Research Assistant

Jan. 2025 – Present

Developed and integrated a monitoring and control system for automation of production processes using the example of laser welding, the system consisted of:

- Instance segmentation using Yolov8 on a custom data set to automatize identifying weld defects.
- Using optical character recognition (OCR) and OpenCV edge detection algorithms to collect data from weld images.

COSM Lab

Saint Petersburg, Russia

Graduate Research Assistant

Sept. 2024 – Present

- Developing a large-scale online city-building simulator.

SELECTED PROJECTS

Self-driving car in a simulated environment using deep-reinforcement learning

March 2022, Sept 2023

Led multidisciplinary research and coordinated the work with 6 supervisors from diverse backgrounds in Computer Vision, Graphics, AI, and Systems Engineering. Achieved a 94% evaluation rating for the project, which was recognized as the top graphics initiative within the institution for a bachelor's thesis.

- Designed and developed a custom physics system by simulating 6 forces that affect the car. Simulated the car with 202 Lidar sensors and 2 Cameras using Unity's ML-Agents.
- Implemented a dynamic traffic system using a way-point algorithm and a pool system and applied it to add up to 30 cars and 30 passengers.
- Compared algorithms DQN and DDQN for car control and proposed a reward function and tested it with success in achieving 30 km/h average car speed after training using DQN.
- Implemented a first-ever integration of cutting-edge computer-vision algorithms CLR-NET and YOLO-v8 into unity to allow for lane and object detection.
- Integrated Open-CV library into unity by creating a custom side channel to connect the training and the simulation.
- Designed and implemented user interfaces to easily track the lane detection and object detection process in real time.

Take Aim (A Multiplayer First-Person Shooting Game with Unity Engine)

July-2022, Sep-2022

Designed and developed a multiplayer game supporting up to 30 players using the Photon service.

- Created and implemented two terrains.
- Designed visual and sound effects for the game.
- Developed user interface and user experience (UI/UX) elements.
- Designed and implemented eight different weapons using the Unity Engine.
- Completed the project as a 4th-year individual project at HIAST and received a 92% evaluation from the judging committee.

SKILLS

Programming Languages. C#, C++, C, Assembly, Python, Java, JavaScript, PHP

Technologies. PyTorch, Docker, Unity, Unreal Engine, Pandas, Dask, Statsmodels, scikit-learn, Flask

Languages. Arabic (Native), English (C2), Russian (B2), French (B1)