

# Omar Rayyan

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## EDUCATION

**New York University Abu Dhabi (NYUAD)**

*Double Major in Electrical Engineering & Computer Science*

August 2021 - May 2025

**GPA: 4.0/4.0**

**IEC High School**

*Cambridge A-Levels, Highest Grade in Physics and 7 IGCSES across region*

August 2018 - May 2021

**GPA: 100.0/100.0**

## PUBLICATIONS

**RCM-Constrained Manipulator Trajectory Tracking using Differential Kinematics** ICAR 2023

*Rayyan, O., Gonçalves, V., Evangeliou, N., & Tzes*

*First-Author Conference Paper*

## RESEARCH EXPERIENCES

**People, AI and Robotics Lab** — Advised by Prof. Animesh Garg (Georgia Tech)

July 2024 - Present

*Research Assistant*

*Atlanta, US*

- Working on a scalable data collection framework for imitation learning, enabling large-scale parallelized data collection via pose-following inputs from widely accessible devices

**General Robotics and AI Lab** — Advised by Prof. Lerrel Pinto (NYU)

January 2024 - Present

*Research Assistant*

*New York, US*

- Leading the **UntidyBot** project, a mobile manipulation framework designed to execute logical sequential actions in diverse environments beyond standard pick-and-place tasks, in collaboration with **Mahi Shafiullah**.
- Incorporating affordance metrics into ConceptGraph to represent objects articulabilities and interactions, adding dynamics to graph-based task planning
- Open-sourced **MuJoCo AR**, a plugin enabling real-time integration of ARKit data from iOS devices to control MuJoCo frames and real robots

**Center for AI and Robotics** — Advised by Prof. Tzes (NYUAD)

September 2022 - September 2023

*Research Assistant*

*Abu Dhabi, UAE*

- Led the project to develop a surgical robotics controller capable of tracking trajectories within enclosed body cavities while minimizing insertion point impact on the skin
- Formalized the Remote Center of Motion (RCM) constraint as an algorithmically optimizable task function for general-purpose robotic manipulators, diverging from the mechanically constrained approach of Da Vinci systems
- Published and presented this work as a first-author at the International Conference on Advanced Robotics (**ICAR**)

**Applied Interactive Multimedia (AIM) Lab** — NYUAD

February 2022 - July 2022

*Student Researcher*

*Abu Dhabi, UAE*

- Developed rehabilitation tasks using kinesthetic feedback via under-screen magnets to aid post-stroke recovery, in collaboration with Cleveland Clinic Abu Dhabi physicians
- Designed and developed serious games to help children develop handwriting skills, with input from education professionals at Cranleigh School Abu Dhabi

## PROFESSIONAL EXPERIENCES



*Software Engineering Intern*

Jul 2023 - Sep 2023

*Munich, Germany*

- Developed a tool for the **Google Space Control** team to automatically evaluate changes in resource configurations before their integration into the Google Cloud reliability pipeline
- My project earned an award by the team for creating an impact on their workflow during my internship

## AWARDS AND HONORS

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- Comma.ai Controls Competition** 2024
- 1<sup>st</sup> place in comma.ai's controls challenge by training a DDPG reinforcement learning agent to steer a car
- Rhodes Finalist** 2024
- Selected as a finalist for the prestigious Rhodes Scholarship, awarded for academic excellence and leadership
- IEEEEXtreme Coding Competition Podiums** 2022/23 & 2023/24
- Led a team to rank 3<sup>rd</sup> in 2023 and 4<sup>th</sup> in 2022 across the region at IEEE's programming competition
- Alfred H. Bloom Scholar** 2024
- Granted annually to **one** student for excellence in experiential learning and academic performance - [Letter](#)
- Deep Learning Graduate Course Competition** 2024
- Led an undergraduate team to podium in the graduate-level deep learning course competition at NYU
- Cambridge Outstanding UK Learner Award** 2021
- Achieved the highest mark in country in my Physics A-Level, and across 7 IGCSEs

## SELECT PROJECTS

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- RoboTurk-v2** July 2024 - In Progress
- A successor to [RoboTurk](#) and in collaboration with a team from Georgia Tech. with Prof. Animesh Garg
- UntidyBot** May 2024 - In Progress
- Mobile manipulation framework for executing logical sequential actions in diverse environments beyond pick-and-place tasks with PhD Mahi Shaifullah
- Portable Framework for Scalable Robot Policy Learning** May 2024 - In Progress
- Leading graduation project in creating a portable device for portable non-teleoperation data collection.
  - Implemented a data-processing and training pipeline for the Action Diffusion Policy and VQ-BeT architectures.
- MuJoCo AR** August 2024
- A [plugin](#) that enables the streaming of ARKit data from a connected iOS device for robot teleoperation in MuJoCo frames and beyond. Installed 12k+ times in the past two months
  - Designed and implemented a list of environments and tasks in MuJoCo accompanying the plug-in.
- LEBSI** November 2021 - May 2022
- Developed an [app](#) that enables people to set up online clothing stores in minutes. Reached #22 on the AppStore top charts.
- Past Code** January 2021 - May 2022
- Developed an [app](#) that uses Apple's vision framework to help students find supporting papers with over 500,000 usages.

Please check [www.orayyan.com](http://www.orayyan.com) for a full list of my projects and experiences.

## EXTRACURRICULAR AND LEADERSHIP

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- Artificial Intelligence Connect Student Club** August 2024 - Present
- Vice President of the Artificial Intelligence student club at NYUAD, where I initiated a bi-weekly reading group for students to discuss recent machine learning research papers
- Competitive Cubing (Rubik's Cube)** January 2017 - Present
- Set the official 4x4 **national record** (average and single) at an official WCA cubing competition
  - Competed in cubing events in Amman, Manama, New York, and Abu Dhabi
  - Led a Rubik's Cube speed-solving workshop at ZINC (Zain Innovation Campus)
- NYUAD 12th & 11th Hackathon for Social Good** April 2022 & April 2023
- Led the development team at NYUAD's Hackathon for Social Good to develop Tanabu, a package using machine learning to improve energy grid maintenance predictions
- Blood Donation App (Qatra)** April 2021
- Developed an app to streamline the process for hospitals to find compatible blood donors in urgent cases
  - Featured in a news segment in Jordan news