

Malek Aburub

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Education

Osaka University

M.E. IN ENGINEERING SCIENCE - SYSTEMS INNOVATION

- Enrolled in the Robotics Manipulation lab run by Professor Kensuke Harada

Osaka, Japan

Apr. 2022 - Present

Jordan University of Science and Technology

B.S. IN MECHANICAL ENGINEERING

- Cumulative GPA: 4.03/4.2

Irbid, Jordan

Sep. 2015 - Feb. 2020

Research Experience

Graduate Student

FUNCTIONAL EIGEN-GRASPING USING APPROACH HEATMAPS

- Developing a grasp planning framework for functionally grasping objects using multi-fingered robots
- Proposing a novel representation of an approach heatmap for the "palm" of the robotic gripper that reduces the grasp search space to functionally grasp objects
- Creating energy terms to work with simulated annealing planners that would take advantage of approach heatmaps in synthesizing functional grasps
- Ensuring that the framework is adaptable to the changes in size and shape of the objects
- Extending the method to robotic grippers that don't share anthropomorphic similarity like the Barrett Hand

Osaka, Japan

Apr. 2022 - Present

Osaka University

RESEARCH STUDENT

- Investigating the application of dexterous robotic grippers in achieving human-like object grasping and simplifying the challenge by incorporating concepts such as synergy.
- Looking into different grasp planning frameworks and how to adjust them to consider factors other than grasp stability

Osaka, Japan

Oct. 2021 - Apr. 2022

Honors & Awards

2021 **Scholarship**, Awarded the Japanese Government (Monbukagakusho) Scholarship

Jordan

2020 **Bachelors**, Ranked first in the batch graduating from the mechanical engineering department

Jordan

Publications and Manuscripts

2024 **Functional Eigen-Grasping Using Approach Heatmaps**, Submitted to Robotics and Automation Letters

Conferences

INTERNATIONAL

2023 **IROS - Late Breaking**, Functional Grasping of Tools Using Approach Heatmaps

Detroit, U.S.A

DOMESTIC

2023 **Robotic Society of Japan**, Functional Grasping of Tools Using Approach Heatmaps

Sendai, Japan

Skills

Programming Python, C++, LaTeX, ROS, MySQL

Languages English (TOEFL: 113), Arabic, Japanese

Professional Experience

Bitar Consultants

MECHANICAL ENGINEERING

- Involved in the design and supervision of the USAID project of building schools in multiple locations in Jordan

Amman, Jordan

Sep. 2020 - Sep. 2021

Volunteering Experience

IROS Kyoto 2022

Kyoto, Japan

REGISTRATION COMMITTEE

- Participated in the organization of the conference as part of the registration team, where we helped visitors with their registration and any individual issues they faced during the conference