Saad Rekiek

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Robotics Engineer

Graduating in September in robotics engineering with a specialization in AI, I wish to apply my R&D skills in the robotics field, acquired during my thesis in collaboration with imec company as a student researcher. I am continuously learning about robotics, computer vision and AI in general, and its industrial applications, and I am convinced that there is immense potential for innovation in these fields. I am looking for a position that will allow me to contribute to innovative projects while continuing to develop my skills in a dynamic environment.

Education

- **Master of Electromechanical Engineering - Specialization in Robotics and Mechatronics**, Brussels Faculty of Engineering (Vrije Universiteit Brussel and Université Libre de Bruxelles) — Sept 2023 – Sept 2025
- **Bachelor of Electromechanical Civil Engineering**, Université Libre de Bruxelles — Sept 2020 - Sept 2023

Skills

Robotics : ROS, ROS2, Gazebo, MoveIt2, RTDE, NVIDIA Isaac Sim/Lab, Mujoco, CoppeliaSim, Forward/Inverse Kinematics, Trajectory Planning

AI/ML : Deep learning frameworks (TensorFlow, PyTorch, Keras), NVIDIA Jetson, CUDA, TensorRT, LLMs

Computer Vision : Object Detection (YOLO), Segmentation (SAM), OpenCV, Camera Calibration, Stereo Vision, 3D Reconstruction, Object Pose Estimation (6D Pose), Sensor Fusion (IMU-Camera)

Embedded & Real-Time Systems : Embedded C/C++, Real-Time Systems, RTOS Basics

Languages : Python, C++, C, Javascript, Typescript, Rust, Kotlin, Java, SQL

Dev tools : Visual Studio Code, Git, Docker, Linux

Experience

Demo Exhibitor, ITF World 2025 Conference by imec – Antwerp, Belgium — *May 2025*

- Presented work at the ITF 2025 conference by imec, demonstrating improvements in robotic grasping using MELEXIS's new 3D force sensors (hardware integration)
- Developed a framework to enable more adaptive and generalizable robotic grasping
- Showcased the solution live at a dedicated stand on the conference demo floor

Student researcher, imec - Brussels — Oct 2024 - Sept 2025

- Conducted research on developing an intelligent robotic framework for dynamic grasping with adaptive force sensing, 6-DOF pose estimation, and real-time control for the robot to understand the physical world around him.
- Integrated multimodal human–robot interaction (HRI) to interpret human intent via natural language, gestures, and interaction cues
- Leveraged a Large Language Model (LLM) as the robot's central decision-making unit to interpret natural language instructions, infer user intent, coordinate task execution and estimate physical properties of the object to grasp.
- Designed advanced algorithms for sensor fusion (including 3D force feedback), intent recognition, and dynamic grasp control to enable safe and intuitive human–robot collaboration

- Validated framework performance through extensive real-world experimentation (pharmaceutical use case)

Software Engineer internship, Institut Jules Bordet – Brussels August 2024 – Oct 2024

- Designed and developed new end-to-end software solutions to streamline clinical workflows, including both front-end and back-end components for a patient management system
- Created and maintained secure, reliable databases to ensure robust medical data management in compliance with healthcare standards
- Prototyped innovative AI-powered decision-support tools tailored to healthcare applications
- Participated in DevOps practices for smooth, reliable deployment and integration of software in a clinical environment
- Gained hands-on experience in full-stack development, data management, and AI within a regulated, healthcare-focused context

Undergraduate Researcher Assistant, Ecole Polytechnique de Bruxelles– Brussels Sept 2023 – June 2024

- Developed motion planning algorithms for the KUKA youBot, a mobile manipulator with omnidirectional wheels
- Implemented and simulated artificial potential field (APF) methods in MATLAB, proposing novel strategies to address local minima
- Began developing a model predictive control (MPC) framework for trajectory optimization, including kinematic modeling and simulation validation
- Focused on advanced path planning, optimization techniques, and mobile robotics systems

Private Teacher– Brussels July 2021 – Sept 2023

- Mathematics, physics
- Robotics, Control and Automation

Projects

Thesis : Intelligent Grasping Framework for Robotic Perception of Physical Properties Oct 2024 - June 2025

- Developed a dynamic grasping system with adaptive force sensing, 6-DOF pose estimation, and real-time control for physical interaction
- Integrated multimodal human–robot interaction (HRI) using natural language, gestures, and intent cues
- Designed and validated advanced algorithms for sensor fusion, intent recognition, and dynamic grasp control in both simulation and real-world settings
- Built an interactive user interface allowing users to communicate with the robot and specify desired actions or objects

6-DOF Pose Estimation for Robotic Grasping 2025

- Developed a vision-based 6-DOF pose estimation pipeline to localize objects for precise robotic grasping
- Implemented deep learning models to estimate object orientation and position from RGB-D input (Intel Realsense D435)
- Integrated 6-DOF pose estimation with UR3e grasp planning for robust manipulation of complex-shaped objects in cluttered, real-world scenes.

Real-Time Object Detection and Tracking System 2024-2025

- Developed a real-time object pose tracking system using FoundationPose without instance-specific training
- Applied the system to robotic grasping tasks involving unknown and irregular objects in dynamic scenes
- Optimized tracking performance for real-time image processing / inference and robustness to occlusion, lighting variation, and background clutter

Vision-Language Guided Object Segmentation 2024

- Built a system using multi-object segmentation (e.g., Segment Anything Model) and guided selection via prompt-matching to locate the target object in cluttered scenes

- Enabled a robot to pick the correct object by linking vision, language, and manipulation in a closed-loop pipeline

Languages

- English (C1)
- French (Mother Tongue)
- Dutch (B2)
- German (Beginner - Currently learning)

Soft Skills

- Continuous Learner
- Adaptability
- Detail-oriented
- Creativity
- Result-oriented
- Effective Communicator
- Collaborative Team Member