

# Berk Çiçek

Ankara, Turkey

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## EDUCATION

**Bilkent University**, Ankara, Turkey

2022 – 2025

M.Sc. in Computer Engineering

CGPA: 3.96/4.0

Thesis: *Contact-VLA: Zero-Shot Planning and Control for Contact-rich Manipulation*

Advisor: Asst. Prof. Ozgur Oguz

**Bilkent University**, Ankara, Turkey

2017 – 2022

B.S. in Mechanical Engineering

CGPA: 3.33/4.0

## RESEARCH EXPERIENCE

**Graduate Research Assistant**

Sep 2022 – Present

*LIRA Lab, Bilkent University*, Ankara, Turkey

Advisor: Asst. Prof. Ozgur Oguz

- Developing zero-shot manipulation frameworks combining Vision-Language models with motion planners for contact-rich robotic manipulation
- Designed and implemented **CoRAL** (Contact-Rich Adaptive LLM-based Control), a neuro-symbolic framework integrating LLMs with MPPI controllers for adaptive physical reasoning (under review at RSS 2026)
- Built end-to-end pipelines for robotic manipulation using **Franka Research 3** robot, including perception (FoundationPose), planning (MPPI), and reactive control modules
- Developed hybrid sequential manipulation planner (**H-MaP**) published in RA-L 2025, enabling complex multi-stage manipulation tasks
- Implemented vision transformer-based grasping system (**FViT-Grasp**) achieving real-time inference for 6-DoF grasp detection

**Visiting Researcher**

June 2021 – Aug 2021

*National Research Center of Italy (CNR-IPCF)*, Messina, Italy

Supervisor: Dr. Onofrio Maragò

- Developed computational models for Janus particles under optical potentials and thermophoresis using MATLAB
- Contributed to research published in *ACS Photonics* on optically driven micro-engines with full orbital motion control

**Undergraduate Researcher**

Mar 2020 – June 2022

*Bilkent University*, Ankara, Turkey

Supervisor: Asst. Prof. Luca Biancofiore

- Conducted computational fluid dynamics (CFD) simulations and particle modeling using LAMMPS, OpenFOAM, and MATLAB
- Investigated self-driven complex particles under optical potentials for micro-robotics applications

## PUBLICATIONS

### Journal Publications

- **H-MaP: Iterative and Hybrid Sequential Manipulation Planner**  
*IEEE Robotics and Automation Letters (RA-L)*, 2025. To be presented at ICRA 2026.
- **Optically Driven Janus Micro Engine with Full Orbital Motion Control**  
*ACS Photonics*, 2023.

### Preprints & Under Review

- **CoRAL: Contact-Rich Adaptive LLM-based Control for Robotic Manipulation**  
Under review at *Robotics: Science and Systems (RSS)*, 2026.
- **FViT-Grasp: Grasping Objects With Using Fast Vision Transformers**  
arXiv:2311.13986.
- **Interpretable Responsibility Sharing as a Heuristic for Task and Motion Planning**  
arXiv:2409.05586. Under review.

## RESEARCH INTERESTS & TECHNICAL SKILLS

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### Research Interests:

Robotic manipulation, Vision-Language-Action (VLA) models, Foundation models for robotics (LLMs/VLMs), sampling & optimization-based motion planning, Model Predictive Control, Neuro-symbolic reasoning, Zero-shot task generalization, Embodied AI

**Programming & Tools:** Python, C++, MATLAB, Git, Linux

**Robotics Platforms:** Franka Emika Panda, Gazebo, MuJoCo, ROS/ROS2, Drake, RAI, RoboSuite

**Machine Learning:** PyTorch, TensorFlow, Hugging Face Transformers, scikit-learn, Weights & Biases

**Computer Vision:** FoundationPose, Vision Transformers (ViT), OpenCV, 6-DoF pose estimation

**Simulation & Modeling:** OpenFOAM, LAMMPS, Ansys, Comsol

**Data Engineering:** Spark, SQL, Airflow, Tableau

**CAD & Design:** CATIA, SolidWorks, Unity

**Languages:** Turkish (Native), English (Fluent), Italian (Beginner), Spanish (Beginner), German (Beginner)

## TEACHING EXPERIENCE

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Teaching Assistant, Bilkent University

- **CS-549: Learning for Robotics** Fall 2023 -Spring 2024
- **CS-202: Fundamental Structures of Computer Science II** Spring 2024
- **CS-115: Introduction to Programming with Python** Fall 2022 – Spring 2023

## AWARDS & HONORS

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- **Trendyol AI Hackathon Winner** – First place with presented AI-powered search algorithm 2025
- **TAI-TUSAS Hangar Award** – 90,000 TL prize for Smart Road Maintenance Platform 2023
- **Dincer Logistics Hackathon Winner** – 100,000 TL prize for WareMan computer vision warehouse system 2023
- **European Union EIT Jumpstarter** – Selected for Bilabel data labeling platform 2023
- **Bilkentpreneurs Competition** – 2nd place for Bilabel startup 2024
- **Odgers Berndtson CEOx1Day Winner** – Future leadership development program 2023

## SELECTED PROJECTS

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- **PuzzleWorld-3D** (Ongoing) – Benchmark platform for testing reasoning capabilities of embodied AI and foundation model agents via API-based 3D manipulation tasks. puzzleworld-3d.com 2026
- **Bilabel (Co-Founder)** – Gamification-based data labeling and validation platform for computer vision applications 2023–2024
- **Hand Pose Estimation with LTF** – CS554 Computer Vision course project 2023
- **Grasp Point Detection with F-ViT** – CS549 Learning for Robotics course project 2023
- **Multi-Directional Power Soccer Chair** – Graduation project: wheelchair with VR game interface using Unity and Photon 2022

## INDUSTRY EXPERIENCE

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**Data Scientist**, Trendyol, Istanbul, Turkey Feb 2025 – Present

Developing AI-powered search algorithms for Turkey's largest e-commerce platform

**Data Scientist**, Invent Analytics, Istanbul, Turkey July 2024 – Jan 2025

Developed AI-driven predictive models for demand forecasting and inventory optimization in retail sector

## REFERENCES

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- **Dr. Ozgur Oguz**, Assistant Professor, Bilkent University  
ozgur.oguz@bilkent.edu.tr
- **Dr. Onofrio Maragò**, Research Director, CNR-IPCF, Italy  
onofrio.marago@cnr.it
- **Dr. Luca Biancofiore**, Professor, University of L'Aquila, Italy  
luca@bilkent.edu.tr