

# Hüseyin Mert Çalışkan

Mechatronics Student | Interactive Visual Computing

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## EDUCATION

Kocaeli University | Kocaeli, Turkey

İzmit / KOCAELİ

B.Sc. in Mechatronics Engineering

2021-Present

GPA: 2.71 / 4.00

Relevant Coursework: Robotics, Control Systems, Image Processing, C++ Programming.

## PROJECTS

**Real-Time Dense SLAM with 3D Gaussian Splatting** | Graduation Thesis

**Focus:** Embedded Vision, Edge Computing, 3D Reconstruction.

**Hardware/Stack:** NVIDIA Jetson Orin Nano, ZED 2 Stereo Camera, ROS 2, Python, Docker.

**Details:**

- Built a pipeline to capture RGB-D data from a stereo camera and feed it into a Gaussian Splatting training loop in real-time.
- Optimized the rendering process to run on an edge device (Jetson Orin), tackling memory constraints and CUDA limitations.
- Achieved real-time dense mapping of indoor environments, aiming to bridge the gap between robotics SLAM and high-fidelity visualization.

[\[Github/Demo Link\]](#)

**DiffCV Quest: Gamified Computer Vision Education** | Solo Developer

**Focus:** Interactive Graphics, Serious Games, Image Processing.

**Stack:** Godot Engine (GDScript), Python, OpenCV.

**Details:**

- Designed and developed a small game to visualize basic computer vision concepts through an interactive level.
- Implemented image processing algorithms (e.g., edge detection, thresholding) as playable game mechanics.
- Aimed to gamify CV learning by combining theory with visual feedback.

[\[Github/Demo Link\]](#)

**3D Asset Pipeline & Procedural Modeling** | Indie Projects

**Focus:** Procedural Generation, Digital Sculpting, Character Pipeline..

**Tools:** Blender (Geometry Nodes), ZBrush, Unity.

**Details:**

- Procedural Tools: Developed parametric tools using Blender Geometry Nodes to automate asset creation. Created a "Wall Generator" and procedural Rock/Wood texture alpha generators to streamline environment design for asset packs.
- Character Production: Executed the full character pipeline from High-Poly sculpting in ZBrush to Retopology, UV Mapping, and Rigging in Blender (excluding simulation).
- 3D Generalist: Focused on creating modular, game-ready assets with optimized topology suitable for real-time engines.

## TECHNICAL SKILLS

- **Languages:** Python, C#, C++ (basic level)
- **Engines & Tools:** Unity, Godot, Blender, ROS 2, Docker, Git
- **Libraries:** OpenCV, Open3D, NumPy, PyTorch (Basic)
- **Platforms:** Linux (Ubuntu), Windows, NVIDIA Jetson

## EXPERIENCE

### Real-Time Traffic Detection & Sensor Data Logging

R&D Internship at Intetra, Aug 2024 - Sep 2024 (Gebze, Istanbul)

During my internship at Intetra's R&D office, I explored real-time image processing and sensor data management, contributing to internal prototype efforts for traffic monitoring systems.

- Initiated self-directed learning with Python and OpenCV to build a basic vehicle detection system for traffic videos and live IP camera streams.
- Implemented a time synchronization fix using NTP and RTP timestamps to reduce latency between stream source and host.
- Contributed to a sensor logging task by encoding light sensor data into CRC-formatted logs for diagnostic purposes.

### Autonomous Agricultural Rover – Software Development

University Team Project | TÜBİTAK & Teknofest Supported | Sep 2024 – Sep 2025

Contributed to the development of an autonomous ground vehicle with a focus on SLAM-based 3D mapping and system integration using ROS 2 and Jetson Orin.

- Built a dense real-time SLAM system using Gaussian Splatting and RGB-D input, optimized for edge devices.
- Integrated multiple subsystems including motor control, sensor interfacing, and ROS node communication.
- Collaborated across hardware/software teams to ensure robust, real-time navigation in dynamic environments.

### Network Automation & Infrastructure Management

IT Internship at Intetra, Nov 2025 - January 2026 (Beykoz, Istanbul)

Provided technical support and infrastructure maintenance for corporate communication systems, combining automation scripting with hands-on hardware troubleshooting.

- Managed virtual test environments using VMware, ensuring safe execution of firmware recovery and network simulation tasks.
- Configured and troubleshoot networked endpoints (L2/L3), resolving IP conflicts and connectivity issues using CLI tools (Ping, ARP, Static IP).
- Developed custom scripts to automate health monitoring (Ping/HTTP status) and firmware updates for 100+ devices, optimizing operational efficiency.