NoahBecker

contact
beckerhnoah@gmail.com
+49 (0)1575 1706739
Nieder-Ramstädter
Straße 189 02-09-02
64285 Darmstadt

birthday
17.02.2000

languages
German (mother tongue)
English (C2)
French (B1)

programming
Advanced:
Python
(OpenCV, PyTorch,
Pandas, NumPy)
Java, VBA, SQL, LaTeX,
Unity, ROS1, ROS2

Intermediate:
C, C++, C#, JavaScript,
Android Studio, Bash,
PowerShell, prompt
engineering, Matlab,
LabVIEW, OpenGL

other skills
Linux Debian, Docker,
RasberryPi, Arduino, 3D
Printing, Fusion 360,
Regulator Design, pixel
and vector art design
(Affinity), Microsoft Office

personal interests
Creative writing
Game development
Calisthenics
Ballroom dance
Bass clarinet

education

2022-Present **M.Sc. in Autonomous Systems and Robotics**
Technical University of Darmstadt
Preliminary Grade: 1.4 — Germany

2018-2022 **B.Sc. in Computer Science**
Friedrich-Alexander-Universität Erlangen-Nürnberg — Germany

2016-2018 **Emil-von-Behring Gymnasium**
Science specialized high school — Germany

2009-2015 **American School of Antananarivo** — Madagascar

2006-2009 **MPS-Erlangen** — Germany

experience

2024-Present **Intelligent Autonomous Systems Group** — Darmstadt, Germany
Research assistant
- Research into ML and analytical slip detection using visual-tactile sensing in the context of teleoperation.

2023-2024 **Artificial Intelligence and Machine Learning Lab** — Darmstadt, Germany
Research and teaching assistant
- Teaching assistant for the course "Introduction to Artificial Intelligence"
- Design of the course "Introduction to Machine Learning in Python"

2019-2022 **Siemens Energy** — Erlangen, Germany
Working student - Agile software developer for Digital Operations Management
- Process automation, web development, software integration, user management, and technical support.

2020-2021 **Department for Data Management in cooperation with Siemens Energy** — Erlangen, Germany
Full-stack and ML-ops
- Development of a web application for the classification and visualization of power plant data in Django.

2019-2020 **Department for Data Management, FAU** — Erlangen, Germany
Research and teaching assistant
- Tutor for Process-Oriented Information Systems, Computer Science for Engineers, and Knowledge Discovery in Databases.

2018 **GreenYellow Madagascar** — Antananarivo, Madagascar
Intern
GreenYellow is a company that sells and installs solar panels.
- System administrator
- Procurement of new computers and equipment

2023-Present **Event organization for Campus Connect Darmstadt(volunteer work)** — Darmstadt, Germany
Team supervisor, Volunteer work
- Coordinated multiple teams and ensured smooth operations during weekly events.

2016-2024 **Youth group leader for the parish Elia Erlangen (volunteer work)** — Erlangen, Germany
Volunteer work
- Organized and led activities, provided mentorship, tutoring, and fostered community involvement among youth.

2018-2022 **Studienkreis Erlangen** — Erlangen, Germany
Tutor for middle and high school students
- Tutoring in math, English, and computer science.

Selected Projects

Master's Thesis: Transformer-Based Multimodal Sensor Fusion for Slip Speed Control in Robotic Grasping (2026)
Researching transformer-based neural networks for predicting and controlling slip speed in robotic grasping using multimodal visuo-tactile, visual, IMU, and force/torque sensor fusion using a self-engineered test-bench.

IEEE ICRA@40 – Integrating and Evaluating Visuo-tactile Sensing with Haptic Feedback for Teleoperated Robot Manipulation (2024)
Developed a teleoperated TIAGo humanoid robot system with Vive VR, haptic feedback gloves, and visuo-tactile sensors for real-time haptic feedback. I presented this work as the primary author at ICRA, Rotterdam. Technologies: Computer vision, haptic motor control, virtual reality, teleoperation, ROS, Python

International Conference on Robotics and Automation (ICRA) -ViTac – Visuo-tactile Sensing with Haptic Feedback (2024)
This is an earlier version of the above work, which was accepted to a workshop at ICRA, Yokohama, Japan. The goal of the project is to create a teleoperated solution aimed at improving the quality of life for immobile individuals by enabling independent remote task completion (e.g., shopping).

Bachelor Thesis: Optimizing Robotic Bin-Picking using Supervised and Imitation Learning on VR Teleoperation Data (2021-2022)
Developed and integrated a neural network-based part selection system to improve robotic bin-picking for semi-autonomous handling of radioactive waste. Leveraged supervised learning on datasets generated via VR teleoperation and simulation in Unity. Achieved a grasp accuracy of 73%, yielding a 5% improvement over the old system, with only 1.2ms added latency. Technologies: PyTorch, Vive VR, ROS, YOLO, Unity (C#)

Reinforcement Learning Agent in Games (2024)
Developed a framework based on AlphaZero capable of learning to play various games (tic-tac-toe, Connect4, Snake) using a unified model architecture. Tried approaches with both ResNet and MLP. Technologies: PyTorch, Alphazero

LabVIEW Coffee Machine Automation (2024)
Programmed a coffee machine using LabVIEW, including sensor integration, actuator control, and robust software for touch screens. Developed a Python simulation to supplement limited hardware access. Technologies: LabVIEW, Electrical Engineering, Microcontroller Programming, Python.

Implementation of a Custom Rendering Pipeline in OpenGL (2024)
Designed and implemented a rendering pipeline with ray tracing, shading, culling, screen mapping, and projection. Built a custom scene tree and animation system. Technologies: C++, OpenGL

Tool Contact Force Estimation with Visuo-tactile Sensors for Robot Drawing (2023)
Mounted a pen to a Franka robot arm and used a visuo-tactile sensor to estimate the force at the pen tip. Developed multiple computer vision-based algorithms to infer the force, including a neural network-based approach. Technologies: ROS, computer vision(stereo, motion flow, SIMD), PyTorch

Biometric Door Opener: Ambient Intelligence (2023)
Developed an AI-based face detection door opener app. The app scanned faces on-device, encoded them, and sent data to a web server for authentication and door control. Technologies: PyTorch, Flask, Android Studio

Siemens: BOM Full-Stack Web Application (2021-2022)
Developed a BOM web application integrated with Siemens databases. Automated user management workflows with VBA and participated in QA and project planning with an international team. Technologies: JavaScript, HTML, CSS, VBA, Python, Java

3D Scanning and Measuring with Visuo-tactile Sensors (2022)
Used a GelSight Mini visuo-tactile sensor to create 3D point clouds and perform 3D image stitching of object parts. Technologies: Computer vision, 3D point cloud analysis, image stitching

Robotics 101 – Mobile Robot Pick and Place (2022)
Implemented full kinematics, computer vision, path planning, SLAM, and high-level action planning on a Turtlebot platform for autonomous object detection and pick-and-place tasks. Technologies: C++, ROS, computer vision

Power Plant Data Visualization Web App (2020)
Created a Django web application for complex visualization of large-scale power plant data from Siemens, including time series, outlier analysis, and topological projections. The goal was to match sensor data to their respective sensors, in the cases were the labels where lost, in addition to detecting anomalies. Technologies: Django,Python, Pandas, HTML, JavaScript

NaoBot Soccer Challenge (2020)
Programmed a team of humanoid Nao robots for a soccer challenge, implementing motion, multi-agent collaboration, and high-level planning. Achieved first place in the class competition. Technologies: ROS, Unity, C++, Python, YOLO, SLAM

LEGO Mindstorms Blackjack Robot (2019)
Built an autonomous blackjack robot using LEGO Mindstorms, featuring card recognition via color sensor and text detection, game state management, and support for four players. Technologies: LEGO Mindstorms, embedded programming