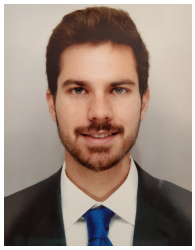

# Nathan Corral


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As a Computer Engineer with a master's specialization in AI and several years of experience in Software Engineering, I am eager to advance applied automation through state-of-the-art deep learning solutions.

## Job Experience

**Humanoid Robots Lab – University of Bonn** *Research Assistant*
09.2021 – 09.2022 Bonn, Germany

- Contributed to research and publications in personalized robot navigation.
- Used the photo-realistic simulator iGibson (PyBullet backend) to generate data for a deep reinforcement learning-based path planning algorithm.
- Setting up and conducting a user study evaluating human-robot-interaction in a VR headset, with a follow-up on real robot hardware.

**Head Rush Technologies** *Contract Engineer*
12.2019 – 04.2020 Boulder, USA

- Contract was to code the firmware on a ATmega328PB Microchip for a proof-of-concept system.
- Completed field tests and project documentation.
- Success from this prototype led to further development, ultimately released as their "Catch-and-Hold Technology".

**Aqronos** *Software Engineer*
11.2018 – 12.2019 Denver, USA

- Designed ROS nodes for visualization of the company's LiDAR prototype.
- Interact with a REST API hosted on the embedded system for configuring hyperparameters.
- Filtered point clouds and grouped objects using the C++ Point Cloud Library.

## Education

M.Sc. **University of Bonn** *Computer Science*
10.2020 – 09.2023 Note: 1.7

B.Sc. **University of Illinois Urbana-Champaign** *Computer Engineering*
08.2013 – 05.2017 GPA: 3.55/4.0

## Projects

2024 **ROS 2 Whisper** Video, Source

As an extension of this open source project, I implemented boarder-less, live audio transcription. My contribution has led to me being an active maintainer in this project. Written in C++, the code emphasizes:

- Scalability, using both inheritance and composition in object-oriented programming behavior.
- Efficiency, through intentional memory management, thread-safe callbacks and work splitting across multiple nodes.
- Simplicity, in the well thought-out implementation of complex merging algorithms.

## Publications

- J. de Heuvel, **N. Corral**, et al. "Learning depth vision-based personalized robot navigation from dynamic demonstrations in virtual reality" *IROS*, 2023

## Skills

| | |
|---|---|
| Languages | · English (Native) · German (C1) |
| Strengths | · Problem Solving · Cross-Team Collaboration · Reliable · Technical Documentation · Hard Working |
| Coding | · C++ · Python · Bash · C · LaTeX · Java |
| Software | · Linux/Ubuntu · GitHub · Docker · ROS/ROS2 · Hyperstack · AWS EC2 |
| Libraries (Py) | · PyTorch · Hugging Face · TensorFlow · Matplotlib · Pandas · OpenCV · NumPy · Scikit-learn |
| Knowledge | · Agile · REST API · Test-driven Development · POSIX · Object Oriented Programming · Data Structures |
| Deep Learning | · Computer Vision · Generative AI · Large Language Models · Gradient Descent Optimization · Retrieval-Augmented Generation · Reinforcement Learning · Point Cloud Processing · CUDA |