Nathan Corral

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Computer Engineer with a master's specialization in AI and a few years of experience in robotics and software engineering, seeking a role to advance robotic systems and AI-driven solutions within Amazon Robotics R&D.

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.
- Programmed the ROS interface for 3D localization of humans from an RGBD camera using deep learning and implemented this on a real robot for autonomous navigation.
- Used the photo-realistic simulator iGibson (Bullet backend) to generate data for a deep reinforcement learning-based path planning algorithm.

Head Rush Technologies
Contract Engineer

12.2019 – 04.2020
Boulder, USA

- Contracted to code the firmware on a ATmega328PB Microchip for a proof-of-concept system.
- Completed field tests and project documentation.

Aqronos
Software Engineer

11.2018 – 12.2019
Denver, USA

- Designed ROS nodes for visualization of the company's LiDAR prototype.
- Interacted with a REST API to set parameters on an embedded system.
- Filtered point clouds and grouped objects using the C++ Point Cloud Library.

Education

Rheinische Friedrich-Wilhelms-Universität Bonn
M.Sc. *Computer Science*

10.2020 – 09.2023
Note: 1.7

<u>Thesis</u>:   ***Stochastic Transformer for Prediction of Multiple Futures***

- Developed a novel transformer-based predictor architecture, able to learn a distribution over potential futures.

University of Illinois Urbana-Champaign
B.Sc. *Computer Engineering*

08.2013 – 05.2017
GPA: 3.55/4.0

Projects

ROS 2 Whisper
2024
Maintainer Video, Source

- Extended this open source project to support boarder-less, live transcription – leading the the release of version 1.4.
- Implemented the C++ code to place special attention on code efficiency and scalability.
- Deployed onto an Nvidia Jetson Orin NX for continuous audio transcription.

ROS 2 Computer Vision
2024
Author Video, Source

- Designed a ROS 2 pipeline to run multiple Computer Vision (CV) tasks (Object Detection, Per-Pixel Segmentation) in parallel.
- Run the pipeline on both live camera feed and a dataset, which allowed time comparisons between the asynchronous running of multiple models.

Skills

Languages		· English (Native) · German (fluent, C1 self-assessed)
Strengths		· Problem Solving · Cross-Team Collaboration · Reliable · Technical Documentation · Hard Working
Coding		· C++ · Python · Bash · C · LaTeX · Java · Go
Software		· Linux/Ubuntu · GitHub · Docker · ROS/ROS2 · Hyperstack · AWS EC2
Knowledge		· Agile · REST API · Test-driven Development · Multithreading · Computer Architecture/OS fundamentals · Continuous Deployment · Object Oriented Programming · Data Structures · Qt
Robotics		· Forward/Inverse Kinematics · SLAM · Path Planning · PID / Model Predictive Controllers · Kalman (Bayes) Filters
Deep Learning		· Computer Vision · Generative AI · Large Language Models · Gradient Descent Optimization · Retrieval-Augmented Generation · Reinforcement Learning · Point Cloud Processing · CUDA