Christopher Dickson

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Summary

Experienced Software Engineer, with expertise in autonomous vehicle development, seeking a position as a Robotics Software Engineer. Skilled in programming, algorithm design, motion planning, quality assurance, and debugging of multiple computer and robotic systems.

Professional Experience

Seegrid Corporation — Pittsburgh, PA

Software Engineer II — May 2023 – October 2025

Designed, built, and maintained software features for industrial autonomous mobile robots. Developed new software and features for the application software team and the planning and execution team.

Duties

- Developed products and features for autonomous material handling robots.
- Designed, built, and maintained software, using C++ and Python, for the robot state machine system and the ROS 2 based autonomous planning and execution framework.
- Triaged internal and customer issues to identify the root cause of the problem and determine a resolution.
- Collaborated with cross-functional teams to design products and features that best suited the market.

Notable Projects

- Technical lead on adding support for overriding the detected height of a pallet with a fixed value in order to quickly resolve a customer issue. This feature enabled the robot to pick up pallets from difficult to detect heights by allowing the height to be overridden at dispatch time. This feature supported multiple interaction types, including picking payloads off the floor, tables, and when unstacking a payload from a stack. Maintained and updated this software to support future applications.
- Updated, modified, and maintained the robot software's route planning algorithm to optimize it in order to avoid high-cost locations so that it followed the most efficient route. Updated this algorithm to support route behaviors from new features, and created internal documentation for the route planner algorithm.
- Investigated and fixed the transformations of real-world locations in a mapped region relative to the position of the robot as part of the development of a new region mapping feature. This ensured the mobile robot could engage with those locations at the correct positions while unblocking development before the feature deadline.
- Added new data sets and modified existing tables for the robot software using SQL. Maintained and updated the robot software databases to support new features and have information easily accessible to the robotic system.

Software Test Engineer III — May 2016 – May 2023

Developed, maintained, and executed automated test programs to ensure the industrial autonomous robotic system satisfied safety, technical, and customer requirements.

Duties

- Created and maintained automated test systems for robot software.
- Maintained the infrastructure for the tests to execute on. This included virtual machines and docker containers.
- Analyzed test results and investigated issues in the product software and reported these issues to the development teams.

Notable Projects

- Led the effort to update and grow the robot automated system tests which resulted in widespread adoption and growth across multiple teams in engineering.

- Led the design and build of a process to manage simulated devices for sending virtual CAN based messages to the product software. This unlocked the ability to perform simulated automated system testing of the motion control software and hardware interactions which greatly improved the code coverage for automated testing.
- Added AMQP hooks for Protocol Buffer messages and implemented changes in the product code to improve automated testing coverage. This increased the efficiency of the tests and made test writing easier.
- Upgraded the automated testing system test runner from Nose to Pytest. This added new features to the testing system and led to an increase in test usability.

Automotive Robotics Incorporated — East Peoria, IL

NDT (Non-Destructive Testing) Test Engineer — July 2014 – June 2015

Independently scheduled, traveled, and inspected over 250 articulated hauler trucks throughout the United States and Canada. Tested and identified microscopic cracks in Volvo Wheel hubs with an ultrasonic testing device.

Skills

Languages: C/C++, Python, SQL, MATLAB, Java, Bash

Software Tools: ROS/ ROS 2, Scons, CMake, Git, Subversion, Twisted, AMQP, CAN messaging, Pytest, Selenium, Jenkins, Team City, Jira, Confluence, Github, Vim, Visual Studio Code

Operating Systems and Environments: Multiple Linux OS (Ubuntu, CentOS, and Fedora), Windows, Docker, Docker Compose, Vagrant, Ansible

Education

M.S. Robotics Engineering — Worcester Polytechnic Institute

Worcester, MA — 2023

Relevant Courses

Motion Planning, Robot Control, Embedded System Design, Robot Dynamics, Design of Software Systems, Artificial Intelligence for Autonomous Vehicles

Capstone Project - Multi-Robot Coordination System

Designed a simulated multi-robot autonomous warehouse system and orchestrator. The system transported payloads in a warehouse while navigating a pre-mapped area and avoiding collisions. The project utilized ROS 2 and Gazebo for the simulation and a Python fleet management program that sent motion commands to the robots using the NAV 2 API.

B.S. Mechanical Engineering — The Pennsylvania State University

University Park, PA — 2013

Relevant Courses

Industrial Robotics Applications, Modeling of Dynamic Systems, Programming for Engineers with MATLAB, Microcomputer Interfacing

Senior Design Project - Automated Pipe Outer Diameter Measurement Device

Designed and built a robot for our client, Air Products and Chemicals Inc., to measure pipe expansion by traveling along a curved vertical pipe and transfer the data wirelessly to be recorded in a computer.

Certifications and Awards

- Udemy: “Beginning C++ Programming - From Beginner to Beyond” – ID: UC-7052c49a-4722-4a8e-877d-3fdf2970df04
- Engineer-in-Training Certification in the state of Pennsylvania – License: ET019909
- Eagle Scout – Eagle Project consisted of designing, budgeting, raising funds, and leading a group of scouts and adults in building two different 6-foot cages for a nonprofit wildlife rehabilitator.