Zhuo Chen, Ph.D.

Software Engineer

zchenpds@gmail.com | 201-993-4772 | Seattle, WA | LinkedIn | GitHub | Google Scholar

PROFESSIONAL EXPERIENCE

Software development engineer | Amazon, Fuse — Dec 2022 – Present — Seattle, WA

- Led the development of a new mobile number OTP based payment method that allows Amazon to bill the mobile carriers directly for the customer's Prime subscription. Java Scala AWS CDK/SDK Encryption
- Automated manual processes by developing a CLI-based and Step Functions-based tools for developers which reduce the time from hours to minutes for 90% of the scenario. TypeScript bash Step Functions Lambda React
- Engineered automated investigation AI agents and standardized operational procedures, streamlining incident response for core microservices processing 50+ TPS. Kiro Python AWS CLI
- Collaborated with cross-functional teams to engineer new features on over 10 microservices and data pipelines in a business-driven environment. Smithy Java TypeScript DynamoDB S3 SQS/SNS ECS API Gateway

Robotics software engineer | Amazon, Robotics and AI — Jun 2022 – Dec 2022 — Seattle, WA

- Developed Infeed orchestration activities for ORCA (Order Consolidation Automation) Robot. Java gRPC

Staff robotics engineer | Seedland Research and Innovation Center — Nov 2021 – Apr 2022 — Somerville, NJ

- Developed a collection pose planner for a 3D indoor mapping/modelling robot to maximize the Lidar coverage with a reasonable number of collection poses given a 2D occupancy grid. C++ OpenCV ROS TSP Solver
- Developed a 3D model viewer with smooth camera motion planned in SE(3). C++ PCL Trajectory Planning

EDUCATION

Ph.D. in Electrical Engineering (Robotics) | Stevens Insitute of Technology — Sep 2015 – Oct 2021 — Hoboken, NJ

M.S. in Control Engineering (Astronautics) | Harbin Institute of Technology — Sep 2013 – Jun 2015 — Harbin, China

B.E. in Automation (Electrical Engineering) | Zhengzhou University — Sep 2009 – Jun 2013 — Zhengzhou, China

RESEARCH PROJECTS

Autonomous Mobile Robot for Guided Walking Exercise [1], [2] | — Jan 2019 – Oct 2021

- Developed a ROS package for real-time estimation of a trainee's margin of stability by fusing the data from an Azure Kinect on a mobile robot and a pair of instrumented insoles worn by the trainee. C++ Python ROS Kalman Filter Sensor fusion IMU RGBD SLAM Path Planning OptiTrack® Vicon® Teensy® MATLAB®/Simulink®
- Contributed to the Microsoft Azure Kinect ROS Driver repository, improving timestamp accuracy , proposing solutions to a negative latency issue , and reducing the body tracking delay by 70% . C++ Multithreading

Mobile Robot Formation Control | — Sep 2017 – Aug 2018

- Designed a state-feedback formation control algorithm for a 3-robot system [3] .
- Implemented a simulation in V-REP where the control algorithm was used to generate the supervisory signal for a decentralized DNN to learn to achieve the formation given only the Lidar sensor data as input . Python Lua

Visual-Inertial Navigation for Small Unmanned Aerial Vehicle — Oct 2013 – May 2015

- Implemented a quaternion-based complementary filter for quadcopter attitude estimation on NI myRIO. Won the 2nd prize in the annual Harbin Inst. of Tech. Virtual Instrumentation Contest. State estimation SfM LabVIEW

SELECT PUBLICATIONS

[1] **Z. Chen**, H. Zhang, A. Zaferiou, D. Zanotto, and Y. Guo, "Mobile robot assisted gait monitoring and dynamic margin of stability estimation," *IEEE Transactions on Medical Robotics and Bionics*, 2022. DOI: 10.1109/TMRB.2022.3162148.

[2] H. Zhang, **Z. Chen**, D. Zanotto, and Y. Guo, "Robot-assisted and wearable sensor-mediated autonomous gait analysis," in *IEEE International Conference on Robotics and Automation (ICRA)*, IEEE, 2020, pp. 6795–6802.

[3] **Z. Chen**, C. Jiang, and Y. Guo, "Distance-based formation control of a three-robot system," in *Chinese Control And Decision Conference (CCDC)*, IEEE, 2019, pp. 5501–5507.