AARON ANGERT
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EDUCATION

TEXAS A&M UNIVERSITY   College station, TX
    Masters/PhD in Computer Science & Engineering   2017-Present
    Topic: Robotics & autonomous vehicles
    Advisor: Dr. Dezhen Song

UNIVERSITY OF TEXAS AT AUSTIN   Austin, TX
    Bachelor of Science in Computer Science   Graduation May 2014

PROFESSIONAL EXPERIENCE

IBM   Austin, TX
Software Engineer, Cloud   (May 2014 – June 2017)
    Deployed OpenStack cloud services at scale within the IBM Cloud

AWARDS AND HONORS

1st place SAE Autodrive challenge overall dynamic challenge year 4	2020-2021
1st place SAE Autodrive challenge year 4 Highway challenge	2021-2022
2nd place SAE Autodrive challenge II Year 1, Simulation challenge	2021-2022
2nd place SAE Autodrive challenge II Year 1, Overall & Dynamic	2021-2022
3rd place Indy Autonomous Challenge simulation race	2020-2021
3rd place SAE Autodrive simulation challenge year 3	2019-2020

PUBLICATIONS

Cheng, H. M., Song, D., Angert, A., Li, B., & Yi, J. (2019). Proprioceptive Localization Assisted by Magnetoreception: A Minimalist Intermittent Heading Based Approach. *IEEE Robotics and Automation Letters*, *4*(2), 586-593.

Onal, K.D., Zhang, Y., Altingövde, I.S., Rahman, M.M., Senkul, P., Braylan, A., Dang, B., Chang, H., Kim, H., McNamara, Q., Angert, A., Banner, E., Khetan, V., McDonnell, T., Nguyen, A.T., Xu, D., Wallace, B.C., de Rijke, M., & Lease, M. (2017). Neural information retrieval: at the end of the early years. *Information Retrieval Journal, 21*, 111-182.

PUBLICATION REVIEW EXPERIENCE (CONFERENCE NAME)

IROS 2022, 1 paper
ICRA 1 paper 2022

IJRR 1 paper 2020
IROS 2021 1 paper
IROS 2019 1 paper

TEACHING EXPERIENCE

TEXAS A&M UNIVERSITY   College Station, TX
Graduate Assistant Lecturer, Computer Science   (Spring 2022 – Present)
 CSCE 482 Senior design capstone: 30 students
 Responsibilities: lectured, overviewed eight graduate teams working on autonomous
 vehicle projects related to the Autodrive challenge

TEXAS A&M UNIVERSITY   College Station, TX
Graduate Teaching Assistant, Computer Science   (Fall 2017 – Fall 2021)
 CSCE 482 Senior design capstone: Spring 2020 – Fall 2021
 CSCE 452 Intro to mobile robotics: Fall 2019
 CSCE 314 Programming languages: Fall 2017 – Spring 2019

COMPETITIONS

SAE Autodrive Challenge   (2019– Present)
 Team leader for the Autodrive competition, focusing on technical contributions such as
 motion planning, HD map integration, systems engineering, simulation of vehicle within
 Matlab, Simulink, unreal environments.

Indy Autonomous Challenge   (2020– 2021)
 Developed software for motion planning for a simulated race vehicle on the Indianapolis
 motor speedway. Developed within the Ansys SCADE software suite, using Python and
 DDS communication stack.

PROJECTS

Local motion planning (2020-2021)
 As a part of the Year 4 Autodrive challenge, I was directly responsible for the local
 motion planning of our Autonomous chevy bolt at the Michigan Mcity course. Work
 included building a rqt-gui to test translated vehicle trajectories from Mcity to Rellis,
 behavior mapping, Integration with the global motion planner, and vehicle controller.
 Real world tests were performed at the Rellis autonomous vehicle testing grounds. The
 program allowed our team to reach 1st place in the overall dynamic challenge.

Visualization
QR code: make it easy for people to find information about me. Packaging—learn how to sell
yourself to others. Short version—long version. Robotics list.

Autonomous vehicle Simulation

For the Year 3/4 Autodrive challenge, I was directly responsible for the simulation challenge, which consisted of simulating a virtual chevy bolt within an Unreal environment of Mcity. Virtual outputs included Lidar, and camera data, which in turn was used to test the modules on the vehicle directly through ROS. We achieved 3rd place in the year 3 challenge.

For the Year 1 Autodrive challenge II, I lead a group of eight undergrad capstone students to complete aspects of the simulation challenge such as simulating collision avoidance, traffic light interaction and stopping, emergency braking, and waypoint following, as well as simulated ground truth generation, and Software in the loop (SIL testing) with equivalent results. Our team ended up placing 2nd overall.

Relative Lane association

From the Autodrive challenge II Year 1, I was responsible for creation and completion of the relative lanes module, which took input from the vehicles GPS, lidar objects, as well as HD map database to determine their relative lane to the ego vehicle. Information was communicated through ROS and then through a CANBUS message to the scoring mechanism. Test case design was used with ROStest to unit test multiple areas of the course in relation to the ego vehicle for rapid development and error checking. In the Highway challenge where this program was utilized our team placed 1st out of 10 teams.

Fish tracking

In the summer of 2019, I worked with the biology department to develop a tracking system for fishes using the SwisTrack tool in conjuction with OpenCV, as well as helped develop a mechanism for deploying a reward/punishment system for the fished based off of a magnetized reel and IR based interference system.

Data collection for vehicle navigation

In the Spring of 2019, I helped collect IMU/compass data for localization of vehicles positioning without using GPS. This eventually culminated in the paper: Proprioceptive Localization Assisted by Magnetoreception: A Minimalist Intermittent Heading Based Approach, published in RA-L.

Software Engineering at IBM

I worked as a software engineer in IBM's cloud department from 2014-2017, we maintained an Openstack cloud deployment at scale. I also helped build an internal real-time monitoring dashboard solution with user input, login support, and Watson Tradeoff analytics for hypervisor analysis using Flask, Ansible, couchdb w/ Map-Reduce

SKILLS

Project management

Project scheduling using Gantt charts, Pert analysis. Critical path analysis, Work break down structure. program analysis. Assign tasks, use tools, weekly progress reports. Scrum/Sprint management. Critical Design Review. Project Management for Mobility Engineers course: Feasibility assessment, FMEA, Stakeholder grid monitoring, risk management,

Curriculum Vitae

Team captain

Programming languages/Development tools
Matlab, Simulink, python, c++, ROS, linux, windows, mac, github, multithreading, parallel computing, makefiles. Java, C#, Javascript, HTML5, Haskell, Lisp, Golang, SCADE, Atom, VS Code, Eclipse, PostGres, ArcGIS, Flask, Ansible, couchdb, Git,

Specialized packages:
Tensorflow, YOLO v3, SUMO, Unreal, Unity, rostest, virtual machines, docker, RQT-gui,

Courses related robotics/AI
AI, machine learning, robotics, computer vision, reinforcement learning, CNN, Neural Networks Backpropagation,

Software engineering techniques
Agile, waterfall, planning poker, scrums, sprints, Jira,

Hardware:
IMU, GPS, Lidar processing, Camera, embedded systems,