

ZHEKAI (SCOTT) JIN

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EDUCATION

Carnegie Mellon University - School of Computer Science Pittsburgh, PA
M.S. in Robotic Systems Development May 2021

The Cooper Union for the Advancement of Science and Art New York, NY
B.Eng, Major in Electrical Engineering, Minor in Computer Science | GPA: 3.69/4.00 May 2019
Honors Eta Kappa Nu, Tau Beta Pi, Dean's List, School Honors, Half Tuition, Innovation Merit

Courses related Geometry-based Methods in Vision, Computer Vision, Natural Language Processing, Operating System, Databases, Software/Web Development, Communication Network

PUBLICATION

A MultiSensor Data Fusion Approach For Simultaneous Localization And Mapping

Zhekai Jin, Yifei Shao, Minjoon So, et al.

IEEE Intelligent Transportation Systems Conference (ITSC), 2019

1st Place in the IEEE Region 1 2019 Student Papers Competition, Oral Presentation

ACADEMIC RESEARCH

Livox SLAM: a modular Perception system based on Livox Lidar May - Sept. 2019
Carnegie Mellon University, Biorobotics Laboratory Pittsburgh, PA

- Established a robust Lidar SLAM framework for Livox with its non-repetitive scanning patterns
- Incorporated intensity-based features into scan matching for high resistance to aggressive motion

Cooper Mapper : Self-Driving Robot with MultiSensor Data Fusion Sept. 2018 - May 2019
Cooper Union, Autonomy Lab New York, NY

- Implemented real-time 2D Lidar SLAM and Stereo Visual SLAM based on Cartographer & ORBSLAM
- Refactored and extended LOAM with map management, relocalization, and pose-graph optimization
- Developed robust resolution matching algorithms to reduce extrinsic multisensor calibration effort

Cooper-IoT : Generic IoT Platform with Telepresence Utility Jun. - Dec. 2017
Cooper Union, Autonomy Lab New York, NY

- Led a team of five designing IoT network for human traffic flow study with a stochastic queuing model
- Devised real-time WiFi & Bluetooth address tracking algorithm based on an implementation of wireless sensor network which is designed for peripheral environmental parameters acquisition
- Designed human detection algorithm with OpenCV to count and monitor human traffic flow
- Implemented real-time data-driven scheduler of lighting & heat and Achieved average 2% energy saving
- Realized Telepresence by presenting Mixed Reality and Stereo Rendering: integrating camera feed from robots & peripheral environmental data to head-mounted displays (S-PTAM, Unity, C#, C++)

PROFESSIONAL EXPERIENCE

Uber Advanced Technologies Group : Software Engineering Intern Jun. - Aug. 2020
Localization - Mapping Team on SLAM Evaluation Pittsburgh, PA

- Worked at the Localization team on evaluating the output of ATG's offline SLAM system
- Introduced the first objective metric to evaluate the localized pose estimates in absence of a HD map
- Composed a lightweight SLAM verification pipeline which achieved a 98% classifying accuracy on customized dataset, and could easily accommodate other objective metrics for performance feedback

Momenta.ai : Lidar Research & Development Intern May - Aug. 2018
Lidar Team & HD map Team on an end-to-end Lidar Perception system Beijing, China

- Devised efficient Ground Detection & Semantic Road Segmentation algorithms with 98% precision
- Refactored Object Segmentation Modules with 20% memory usage drop by specialized structures
- Designed and implemented a robust real-time Object Tracking pipeline which is able to track even sparse point clouds based on 3D Interpolation, now deployed at Momenta's L4 self-driving solution.

- Totem Power Inc. : Summer Intern** Jun. - Aug. 2017
Independent Research Project on a complete wireless charging system for Drones Bedford Hills, NY
- Presented a fully autonomous wireless charging pipeline compatible with multiple drones (ARM, C)
 - Designed a precise monocular-vision-based landing algorithm to counter the charging range limitation
 - Implemented circuits to incorporate security into wireless charging technologies without firmware breach and agile enough to ensure stable power transmission with minimal weight on the drone.
 - Developed REST APIs and real-time distributed charging status monitoring system with visualization
- Bluegogo (Didi Chuxing Technology Co.) : Research Intern** Apr. - Jun. 2017
Dispatch Team on intelligent dispatching and dynamic pricing Hangzhou, China
- Worked on automatic feature extraction on probabilistic time series forecasting models (PCA, LSTM)
 - Turned Redis sentinel mode to proxy + consistent hashing mode with Redis latency reduced by 20%
 - Automated tests with TestNG and Mockito and reached code coverage of 99%
- Shanghai IC R&D Center Co., Ltd. : Research Intern** May - Aug. 2016
Circuit Testing Team Shanghai, China
- Designed PCB boards and circuits for CCTV cameras. (Altium, SystemVerilog, Cadence Virtuoso)
 - Conducted various tests on performances of CCTV cameras PCB boards

ACADEMIC PROJECTS

- EventPlus : Personalized Event Recommendation System** Apr. - May 2019
github.com/ZhekaiJin/EventPlus
- Developed an interactive web page which allows users to search events and purchase tickets (JavaScript)
 - Improved personalized event recommendation based on search history and favorite records
 - Designed content-based recommendation algorithms to implement curated event recommendations
- Tap News : Real Time News Scraping and Recommendation System** Mar. - May 2019
github.com/ZhekaiJin/Tap-News
- Implemented a data pipeline which monitors, scrapes and dedupes latest news (Redis, RabbitMQ)
 - Built a web application for users to browse news (React, Node.js, RPC, SOA, JWT)
 - Implemented a click event log processor which collects users' click logs to update preference models
 - Designed and built an offline training pipeline for news topic modeling (Tensorflow, DNN, NLP)
 - Deployed an online classifying service for news topic modeling using the trained model
- Pass2act : Passive Voice to Active Voice Article Converter** Mar. 2018
github.com/ZhekaiJin/pass2act
- Rated the best Natural Language Processing final project of the 2017 - 2018 academic year
 - Designed decision tree able to handle conjugation & embedded passive sentences based on linguistics
 - Built visualization rendering the transformation process with dependency parsing (spaCy, Python)
- Textcat : Text Categorizer based on Naive Bayes method on Unigrams** Feb. 2018
github.com/ZhekaiJin/Textcat
- Ranked 3rd place in performance among 107 classifier implementations throughout course history
 - Implemented novel smoothing on Naive Bayes method to achieve over 90% accuracy on test corpus

LEADERSHIP & EXTRACURRICULAR ACTIVITIES

- Cooper HyperLoop - Communication Team Lead Sept. 2018 - May 2019
- Cooper Union Computer Center - System Administrator & Operator Sept. 2017 - May 2019
- Cooper Union Autonomy Lab - Initiator & Lead Research Assistant Jun. 2017 - May 2019
- HackCooper Hackathon - Software & Embedded Programming Mentor Oct. 2018
- Cooper Motorsport (Cooper Formula SAE) - Electronics Team Vice Lead Sept. 2015 - Sept. 2017

COMPUTER SKILLS

- Languages** C++, C, Java, Python, Go, MATLAB, JavaScript, SQL, Shell Scripting
- Databases** MongoDB, Cassandra, DynamoDB, Oracle, MySQL, PostgreSQL, MsSQL
- Technology** MRPT, PCL, ROS, Ceres, g2o, gtsam, Webots, scikit-learn, NLTK, PyTorch, Kafka, Hadoop, Spark, Pig, Tomcat, AWS RDS/Lambda/EC2/EMR/S3
- Training** Sensor Fusion Nanodegree, Robotics Engineer Nanodegree @ Udacity