ZHEKAI (SCOTT) JIN

(929) · 354 · 6799 ⊙ jin4@cooper.edu ⊙ zhekaijin.github.io ⊙ NY,NY

RESERACH INTERESTS

Robotics, Perception, Distributed Embedded Systems, Machine Learning, Artificial Intelligence

EDUCATION

The Cooper Union for the Advancement of Science and Art

B.Eng in Electrical Engineering - Computer Engineering track *Projected June 2019*

Grades Major GPA: 3.84/4.00 Overall GPA: 3.66/4.00

Honors Tau Beta Pi, Dean's List, School Honors, Half Tuition Scholarship, Innovation Merit

Courses related Natural Language Processing, Artificial Intelligence, Operating System, Databases, Data Structure & Algorithms, Software Development, Communication Networks

Hangzhou Foreign Languages School

Graduated as Class Valedictorian *Sept. 2012 - May 2015*

ACADEMIC RESEARCH

Cooper Mapper: Self-Driving Robot with MultiSensor Data Fusion Sept. 2018 - Present

github.com/ZhekaiJin/the-Cooper-Mapper/

· Implemented real-time 2D Lidar SLAM and Stereo Visual SLAM based on GMapping & ORBSLAM
· Refactored and extended LOAM to support map management, relocalization, and ROS nodelet
· Working on robust resolution matching algorithms to reduce extrinsic multisensor calibration effort

Cooper-IoT: Generic IoT Platform with Telepresence Utilty Jun. - Dec. 2017

github.com/ZhekaiJin/Cooper-IoT

· 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 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

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. : System Research & Development Intern Jun. - Aug. 2017

Independent Research Project on a complete wireless charging system for Drones *Bedford Hills, NY*

· 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.
· Designed monocular-vision-based precise landing algorithm to counter the charging range limitation
· Presented a fully autonomous wireless charging pipeline which could perform charging for multiple drones in a queuing fashion under its coordination. (ARM, C)
· Developed RESTful APIs and workflow in a distributed environment for the real-time charging status monitoring website with visualization. (D3.js, Python, C)

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 April. 2018 - Present
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
· Created Java servlets with RESTful APIs to handle HTTP requests and responses

Tap News: Real Time News Scraping and Recommendation System Mar. - May. 2018
https://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

Collaborative Online Judge System: Cooperative Online Editor Jan. 2018
github.com/ZhekaiJin/Collaborative-OJ

· Implemented a web-based collaborative code editor supports multiple access/editing (Socket.io, Redis)
· Developed a web application for attempting coding problems like Leetcode (MEAN, Auth0)
· Built a user-code executor service which builds and executes users code (Docker, Flask)
· Refactored system throughput to 150% by decoupling services (REST) and loading balancing (Nginx)

Celestial Mechanics Application: Fuel-efficient Spaceship Trajectory Study May. 2017
github.com/ZhekaiJin/Celestial-Mechanics-Application

· Implemented solarsystem animation based on OpenGL GLUT (C++)
· Optimized fuel-efficient spaceship trajectory based on three-body model & four-body model (Python)
· Explored deterministic chaotic phenomenon within optimal path searching (OpenGL & C)

LEADERSHIP & EXTRACURRICULAR ACTIVITIES

Cooper HyperLoop - Communication Team Lead	Sept. 2018 - Present
The Cooper Union Computer Center - Operator	Sept. 2017 - Present
Cooper IoT Research Team - Team Lead	Jun. - Dec. 2017
Cooper Motorsport (Cooper Formula SAE) - Electronics Team Vice Lead	Sept. 2016 - Sept. 2017
Cooper Motorsport - Electronics Team Member	Sept. 2015 - Sept. 2016
Cooper MicroElectronics Club - Club Member	Sept. 2015 - Sept. 2016

COMPUTER SKILLS

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