Yubai Di

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EDUCATION

University of California, San Diego 2018 - Present
M.S in Computer Science, GPA: 3.61 Expected Graduation Year: 2020

Pomona College 2012 - 2016
Bachelor of Arts in Mathmatics and Computer Science, GPA: 3.56

RESEARCH EXPERIENCE

Machine Learning for Collision Detection 2018 -
Advanced Robotics and Control Lab, UC San Diego

- Created a method to produce collision-free configurations for high dof robots with VAE. Designed model architecture and pipeline. Reduced 12.22% collision checks and achieved 11.18% speedup on a sampling-based motion planner;
- Researching on learning confidence score of collision for the da Vinci robot towards the goal of determining optimal poses for surgical operations. Surveyed and implemented various discriminative models and scaling methods.

Intrinsically Strong Linking in Complete Graphs 2015 - 2016
Pomona College Mathematics Department

- Formulated the problem of searching embeddings of weakly-linked complete graphs into an integer linear programming problem. Programmed in Java to generate wealy-linked embeddings for K_7, K_8 and minors of K_9.
- Proved lemmas and theorems on conditions for intrinsically strong linking;

INDUSTRY EXPERIENCE

Amazon Lab126 2017 - 2018
Software Engineer *Sunnyvale, CA*

- Led the design and implementation of E2E geolocation-triggered routine feature. Built RESTful microservices and NoSQL database systems to support feature. Support testing, created monitors and set up infrastructure for operation.
- Built database and notification system for storing and querying dynamic geolocation of devices. Designed migration plan from existing platform for scalability, which serves thousands of tps per second.

Amazon Web Services 2016 - 2017
Software Engineer *Seattle, WA*

- Maintained a large-scale distributed system that traverses daily the keymap of AWS Simple Storage System (S3); Debugged distributed system issues and maintained codebase. Managed over 2000 servers over a dozen data centers.
- Delivered the prefix-filtering feature for inventorying objects in S3 by developing on EMR with Apache Spark. Brought down runtime from 8 hours to 0.5 hour on a benchmark bucket with billion keys, with hundreds of servers.

COURSEWORK PROJECTS

Indoor Particle-filter SLAM Winter 2019

- Implemented particle-filter-based SLAM for indoor 2D environments using encoder, IMU and lidar readings;
- Built a texture map of indoor floor by correlating RGBD images with robot positions;

Visual Inertial SLAM for mobile vehicles Winter 2019

· Implemented EKF-based SLAM for mobile vehicles using IMU measurments and stereo images;

Mountain Car and Inverted Pendulum RL Spring 2019

· Implemented SARSA and Q-learning for solving the Mountain Car OpenAI environment;

· Formulated problem for Inverted Pendulum and solved with Value Iterations and Policy Iteration algorithms;

TEACHING EXPERIENCE

Pomona College Quantitive Skills Center 2013-2014

Math Fellow

· Tutored Linear Algebra and Real Analysis;

· Held the highest rate of hours being scheduled by students for the academic year (46 percent);

Harvey Mudd College Fall 2015

Tutor & Grader for CS151 Artificial Intelligence

· Held weekly mentoring sessions to help students work on assignments and projects.

HONORS AND GRANTS

Park City Mathematics Institute Undergradudate Summer School, NSF Summer 2016

The Summer Undergraduate Research Program, Pomona College Summer 2014

Pomona College Scholar 2012-2013

SELECTED COURSEWORK

Graduate: Computer Vision, Machine Learning, Sensing & Estimation in Robotics, Planning & Learning in Robotics, Networked Systems, Reinforcement Learning (IP)

Undergraduate: Monte Carlo Methods, Abstract Algebra, Real Analysis, Topology, Probability & Statistical Theory, Artificial Intelligence, Machine Learning, Autonomous Robot Navigation

ENGINEERING SKILLS

Programming Languages: Python, Java, Matlab, Ruby, Javascript, LaTeX;

ML and Robotics technologies: PyTorch, SkLearn, ROS Kinetic, Rviz, Moveit!, OpenCV, VRep

Web technologies: AWS suite, Rails, Jquery, Bootstrap, Git, Docker;