# James Di

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## EDUCATION

**University of California, San Diego** — San Diego, CA
*M.S in Computer Science, GPA: 3.74* — 06/2020 (expected)

**Pomona College** — Claremont, CA
*Bachelor of Arts in Computer Science and Mathematics, GPA: 3.56* — 05/2016

## PROFESSIONAL EXPERIENCE

**Advanced Robotics and Control Lab, UC San Diego** — San Diego, CA
*Graduate Researcher* — 09/2018 - Present

- Created a novel method for modeling collision-free configurations of high DOF robots with deep generative models (VAE)
- Built a pipeline that generates both in-collision and collision-free samples up to millions scale for model learning
- Developed benchmarking environments on the Baxter robot for comparing effectiveness of the method, reducing 12.22% collision checks and achieving 11.18% speedup on a sampling-based motion planner
- Modelled scores of collision and reachability for the da Vinci surgical system using regression learning techniques

**Amazon Lab126** — Sunnyvale, CA
*Software Engineer* — 07/2017 - 06/2018

- Led the design and implementation of in-production geolocation-triggered routine feature, enabling Alexa users to trigger device actions such as playing music based on geolocation
- Worked with three different teams ranging from iOS/Android platforms to Alexa Automation to ensure end-to-end design compatibility, feature implementation and testing
- Built RESTful microservices, NoSQL databases and notification systems for storing and querying dynamic geolocation
- Designed migration plan from existing platform for scalability, which serves thousands of requests per second

**Amazon Web Services** — Seattle, WA
*Software Engineer* — 09/2016 - 07/2017

- Delivered independently an in-production feature that allows AWS Simple Storage Systems (S3) clients to inventory stored objects by prefix filtering, utilizing Apache Spark on EMR
- Launched a catalog of S3 as member of a eight-person team, which aggregates daily metadata of all objects stored on S3 and is used as the data source for multiple MapReduce applications
- Maintained a large-scale distributed system that traverses daily the keymap of S3, visiting summaries of trillions of objects and supporting business-critical applications such as billing and life-cycling
- Debugged distributed system issues on a thousand-server cluster, including corner cases in paxos-based consensus algorithms and uneven load distribution

## COURSEWORK PROJECTS

**Parameter Estimation and Sensing for Robotics** — 01/2019 - 03/2019

- Generated a texture map for an indoor environment by implementing Particle-Filtering-based SLAM and fusing encoder, IMU and lidar readings from robot sensors
- Developed EKF-based SLAM for mobile vehicles using IMU measurements and stereo images

**Motion planning and Control & Reinforcement Learning** — 10/2019 - 12/2019

- Implemented tabular-based reinforcement learning methods, such as SARSA and Q-learning, as well as deep reinforcement learning methods, e.g. DDPG and REINFORCE with baseline
- Extended ensemble training from Multi-Agent DDPG with novel majority-voting algorithm
- Built efficient graph-based and sampling-based motion planners for 3D environments

## ENGINEERING SKILLS

Methods: Deep Learning, Statistical Modeling, Reinforcement Learning, SLAM, Motion Planning
Programming Language: Java, Python, Matlab, Javascript, Ruby, Shell, LaTeX
ML and Robotics technologies: Torch, Tensorflow, SkLearn, ROS Kinetic, Rviz, Moveit!, OpenCV, VRep
Web technologies: AWS suite, Rails, Jquery, Bootstrap, Git, Docker