Marcus Dominguez-Kuhne

Machine Learning Engineer · Software Engineer · Data Scientist

Education

California Institute of Technology – BS in Computer Science (ML Focus)
 Graduated 2021 GPA 3.8
 Courses: Machine Learning, Computer Vision, Markov Chains, Reinforcement Learning, Probability, Linear Algebra, Advanced Topics in Machine Learning
 Teaching Assistant: Machine Learning & Data Mining (2x), Learning Systems
University of Southern California - PhD in Machine Learning & Robotics
 Matriculated 2021 Advisor: Gaurav Sukhatme

Work Experience

Caltech CAST Lab, Machine Learning Researcher   June - November 2020
 Advisor: Professor Yisong Yue

- Imitation Learning for distance & steer functions for multi-robot planning using Rapidly-exploring Random Tree for Double & Single Integrator Models

UC Berkeley AUTOLab, AI Researcher   June – November 2020
 Advisor: Professor Ken Goldberg

- Trained geometric reasoning network for target occupancy distribution in shelf
- Developed two new algorithms for hidden object search, achieving 89% success
- First author of published IROS 2021 paper (below)

Stanford Vision and Learning Lab, AI Researcher   April – October 2019
 Advisor: Professor Silvio Savarese

- Successfully performed intelligent retrieval of covered object in a physical bin with reinforcement learning & computer vision
- Led development of machine learning computer vision algorithm training
- Developed multi-stage pipeline architecture, published IROS 2020 (below)

Caltech Vision Lab, Machine Learning Researcher   September 2018 – April 2019
 Advisor: Professor Pietro Perona

- Detected dementia using convolutional neural networks on small datasets

Northrop Grumman, AI Intern   June – September 2018

- Deep Q Learning and Evolutionary algorithms for autonomous drone training
- Successfully increased deep learning pipeline & training speed by 200%

Northrop Grumman, Software Intern   June – September 2017

- Programmed Atmel microcontroller for backup intra-satellite communication

Sandia National Laboratories, Software Intern   June 2015 – August 2016

- Wrote Android app using GPS turning off WiFi & Bluetooth in target areas

Publications   *equal contribution

Learning Deformable Manipulation from Expert Demonstrations
 In Submission IROS 2022
 Gautam Salhotra*, I-Chun Arthur Liu*, **Marcus Dominguez-Kuhne,** Gaurav Sukhatme
Mechanical Search on Shelves using Lateral Access X-RAY
 IROS 2021
 Marcus Dominguez-Kuhne*, Huang Huang*, Jeffrey Ichnowski, Vishal Satish, Michael Danielczuk, Kate Sanders, Andrew Lee, Anelia Angelova, Vincent Vanhoucke, Ken Goldberg
Visuomotor Mechanical Search: Learning to Retrieve Target Objects in Clutter
 IROS 2020
 Andrey Kurenkov*, Joseph Taglic*, Rohun Kulkarni, **Marcus Dominguez-Kuhne,** Animesh Garg, Roberto Martin-Martin, Silvio Savarese

Contact

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Technical Skills

Languages: Python, Java, C, C++, HTML

Data Science/ML: PyTorch, RLlib, OpenAIBaselines, Keras, Scikit-Learn, Jupyter, SQL

Robotics: PyBullet, ROS

Scripting: Linux Shell, Bash, Slurm

Toolchains: Git, Docker, AWS, cProfiler, Make

Awards

USC 4-Year Fellowship (2021-2025)
Fellowship for 4 years of PhD study

SURF Fellowship (2019 & 2020)
Caltech fellowship funding for summer machine learning research

Perpall SURF Speaking Competition Semi-Finalist (2019)
Research presentation on research conducted at Stanford

Lockheed Martin Merit Scholarship (2016 – 2021)
National Merit Scholarship Corporation scholarship sponsored by Lockheed for undergraduate study

MIT Summer Scholar (2016)
Selected for MIT high school summer program as a high achieving student

National Hispanic Scholar (2016)