Marcus Dominguez-Kuhne

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 Machine Learning & Robotics
August 2021 – August 2022 Advisor: Gaurav Sukhatme

Work Experience

Amazon FireTV, Data Scientist & Software Engineer September 2022 – Present

- Trained Random Forest Model, for clustering movies, episodes, media etc. from provider (HBO, Netflix, etc.) metadata using pairwise matching
- Created metrics dashboard displaying model performance & training/test set coverage for regions, content types, & providers; presented to business team

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

- Formulated geometric reasoning network for a shelf's occupancy distribution
- 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 robotic arm retrieval of covered object in a physical bin using reinforcement learning & computer vision
- Led development & training of machine learning computer vision algorithm
- 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 using limited datasets

Northrop Grumman, AI Intern June – September 2018

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

Northrop Grumman, Software Intern June – September 2017

- Programmed message service for real-time intra-satellite communication

Sandia National Laboratories, Software Intern June 2015 – August 2016

- Wrote Android app to turn off device WiFi & Bluetooth in target areas using GPS

Publications

*equal contribution

Learning Deformable Manipulation from Expert Demonstrations 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

Email:
mddoming@caltech.edu

Website:
doku88.github.io/website.github.io/

LinkedIn:
linkedin.com/in/marcus-dominguez-kuhne/

Phone: 505 934-7616

Technical Skills

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

Data Science/ML: Apache Spark, Zeppelin, AWS QuickSight, PyTorch, RLlib, OpenAIBaselines, Keras, Scikit-Learn, Jupyter

Robotics: PyBullet, ROS

Scripting: Linux Shell, Bash, Slurm

Toolchains: AWS, Git, Docker, cProfiler, Make, Jira, Amazon Brazil

Awards

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

Caltech Fellowship (2019 & 2020)
Caltech fellowship funding for Stanford & UC Berkeley machine learning research

Perpall Caltech Speaking Competition Semi-Finalist (2019)
Research presentation on paper published from work at Stanford

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

MIT Summer Scholar (2016)
Awarded & attended MIT robotics high school summer program as a high achieving student

National Hispanic Scholar (2016)