Diego Marez

dmarez8ece@gmail.com

EDUCATION

University of California, San Diego — June 2016
M.S. Electrical Engineering, Concentration: *Intelligent Systems*
GPA 3.725/4.0

University of California, San Diego — June 2014
B.S. Electrical Engineering, Minor: *Mathematics*
GPA 3.678/4.0 ***Cum Laude***

SPECIALTIES

Machine Learning, Computer Vision, Deep Learning, Digital Signal & Image Processing, Numerical Optimization & Methods

TECHNICAL SKILLS

Programming Languages: Python, C/C++, Matlab, SQL, Assembly Language(ARM), Shell, Batch

Tools/Skills: Tensorflow, Docker, OpenCV, ROS, Keras, Caffe, Scikit-learn, Pandas, Django Numpy/SciPy, Apache Spark, PyTorch, LaTeX, Linux, Flask, Curl, Horovod

RELEVANT EXPERIENCE

Machine Learning Engineer — 1/2017-*present*
Naval Information Warfare Center Pacific (formerly SPAWAR), Point Loma, CA

- Served as Principal investigator and Co-Principal investigator on basic research and applied research projects respectively.
- Research focused on applications of machine learning in electronic warfare in particular in radar and in computer vision in particular optical flow under camera egomotion.
- Broader research topics include: Deep Clustering, Outlier Detection, Unsupervised Learning, Self-Supervised Learning for Depth, Pose, and Optical Flow, Deep Learning, and One-Class-SVMs, Object Detection.
- Developed experience in multi-GPU training in Tensorflow and parallelized hyperparameter search
- Performed data wrangling on large radar and video datasets for ease-of-use in training machine learning algorithms
- Promoted the growth and application of machine learning organizing paper reading groups and mentoring projects
- Earned a Publication, On the Spot, and Division Award during 2018

Lab Tutor — 9/2014-6/2016
Electrical Engineering Department, UC San Diego

- Provided lectures and discussion sections to aid with material understanding
- Assisted students with circuit setup and proper equipment usage

Computer Vision Engineering Intern — 6/2015-9/2015
Mitek Systems, San Diego, CA

- Researched and developed a variety of novel image binarization workflows for text detection
- Contributed various image thresholding and image enhancement algorithms to codebase
- Profiled and documented a variety of image processing and text detection algorithms
- Algorithm development was done using C++ and OpenCV

Tutor — 9/2012-6/2014
Electrical Engineering Department, UC San Diego

- Provided tutoring for a variety of lower and upper division electrical engineering courses

Engineering Intern — 6/2013-9/2013
Western Digital, Irvine, CA

- Investigated the effects of drive-level factors such as recording density and adjacent track pattern on erase band widths in shingled magnetic recording hard drives
- Developed a series of MATLAB and Batch scripts which facilitated the collection and the processing of data from tested hard drives

Open Source Contributions

- Kornia
- OpenCV Contrib
- Tensorflow Documentation

- AirSim

PUBLICATIONS

- Josh Harguess, Scott Shafer, Diego Marez, "The role of optical flow in automated quality assessment of full-motion video," Proc. SPIE 10396, Applications of Digital Image Processing XL, 1039606 (19 September 2017)
- Josh Harguess, Diego Marez, Nancy Ronquillo, "An investigation into strategies to improve optical flow on degraded data", Proc. SPIE 10645, Geospatial Informatics, Motion Imagery, and Network Analytics VIII, 106450F (8 May 2018)
- Diego Marez, Samuel Borden, Gregori Clarke, John Reeder, Nicholas Johnson, "Radar emitter and activity identification using Deep Clustering Methods" Proc. SPIE Artificial Intelligence and Machine Learning for Multi-Domain Operations Applications (April 2019)
- Diego Marez, Josh Harguess, "Evaluation of unsupervised optical flow methods for deep learning in real world datasets" Proc. SPIE Geospatial Informatics IX (April 2019)
- Diego Marez, Samuel Borden, John Reeder, Nicholas Johnson, "Seq2Seq Autoencoder for Radar Pulse Localization" Military Sensing Symposium (October 2019)
- Diego Marez, Samuel Borden, and Lena Nans "UAV detection with a dataset augmented by domain randomization", Proc. SPIE 11398, Geospatial Informatics X, 1139807 (19 May 2020)

PATENTS

- A neural network approach for localizing radar signals in the presence of noise
  Status: *Started Filing Process on 6/2019*

CERTIFICATIONS

- **Electronic Warfare Technology**, Georgia Tech Research Institute 9/2018
- **Databases and SQL for Data Science**, Coursera 11/2018
- **Fundamentals of Accelerated Data Science with RAPIDS**, NVIDIA Deep Learning Institute 11/2019

HONORS & MISC

Honor Societies: Phi Beta Kappa, Tau Beta Pi, Eta Kappa Nu
Awards: IEEE Micromouse **1st Place** in SW Regional Competition 10/2012-5/2013