Takeshi Kevin Musgrave

KevinMusgrave.com • github.com/KevinMusgrave

Education

Cornell University

PhD in Computer Science (Machine Learning) 2020-2023

- Funded by Meta (Facebook) AI
- Business Minor

Master of Computer Science 2016-2020

McGill University

Bachelor of Electrical Engineering, GPA 3.96/4.00 2012-2016

- Computer Science Minor

Skills

Python, PyTorch, NumPy, Pandas, Javascript, React.js, Bash, Git

Open-Source Code Projects

PyTorch Metric Learning

Created a unified interface for metric-learning losses, miners, and distance metrics. This open-source library has received over 5000 stars on GitHub. It includes code for measuring data-retrieval accuracy and simplifying distributed training. It also includes an extensive test suite and thorough documentation.

PyTorch Adapt

Built a library for training and validating domain-adaptation models. Includes an innovative system of lazily-evaluated hooks for efficiently combining algorithms that have differing data requirements. Also includes an extensive test suite.

Powerful Benchmarker

Developed tools that facilitate experiment configuration, hyperparameter optimization, large-scale slurm-job launching, as well as data logging, visualization, and analysis.

Research Papers

A Metric Learning Reality Check

Showed that baseline metric-learning methods are nearly as effective as the state of the art. Published in ECCV 2020.

[Three New Validators and a Large-Scale Benchmark Ranking for Unsupervised Domain Adaptation]

Introduced three new UDA validators, two of which achieve state-of-the-art performance in various settings. Conducted an empirical study of validators on one million model checkpoints, which is the largest study of its kind to date.

Experience

Facebook AI

Intern: Machine-learning research Sep 2018 - Oct 2019

Compared metric-learning loss functions on a level-playing field and discovered that the performance difference between old and new methods is smaller than prior research indicated. Proposed significant improvements to the evaluation protocol.

Intel Corporation

Intern: Reinforcement-learning software development Jun - Aug 2018

Developed behavioral-planning software for a self-driving car simulator, using reinforcement-learning algorithms.

Intern: Computer-vision software development Jun - Aug 2017

Analyzed state-of-the-art deep-learning algorithms relevant to the autonomous-driving domain. Summarized the key performance metrics and trade-offs between various algorithms.

Cornell University

Teaching Assistant for Introduction to Analysis of Algorithms Jan - May 2017

Helped students understand the course material. Graded assignments.

Head Teaching Assistant for Foundations of Artificial Intelligence Aug - Dec 2016

Received the Outstanding Graduate TA Award from the Department of Computer Science. Supervised undergrad TAs, proctored exams, graded assignments, and helped students understand the course material.

McGill University

Graph-Signal-Processing Research Assistant May - Aug 2015

Researched almost-bandlimited graph signals, for network data analysis.

Computer-Vision Research Assistant May - Aug 2014

Used Nvidia's CUDA parallel-computing platform to speed up stereo-vision algorithms.

Transistor-Fabrication Research Assistant May - Aug 2013

Studied the fabrication and testing of high-frequency gallium nitride transistors.