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- EDUCATION**
- University of Maryland, College Park** **2021-**
Candidate for Ph.D. in Computer Science
- University of California, Berkeley** **2017-2021**
B.A. in Computer Science, B.A in Mathematics
Overall GPA: 3.86, EE/CS GPA: 3.95
- PUBLICATIONS**
- [1] *Memory-efficient Learning for High-Dimensional MRI Reconstruction*
Ke Wang, Michael Kellman, Christopher M Sandino, **Kevin Zhang**, Shreyas S. Vasawala, Jonathan I Tamir, Stella X Yu, Michael Lustig
<https://miccai2021.org/openaccess/paperlinks/2021/09/01/305-Paper2251.html>
MICCAI 2021
- [2] *Memory-efficient Learning for Large-scale Computational Imaging*
Michael Kellman, **Kevin Zhang**, Jon Tamir, Emrah Bostan, Michael Lustig, Laura Waller
<https://ieeexplore.ieee.org/document/9204455>
IEEE Transactions on Computational Imaging, 2020
- TALKS**
- [3] *3D Fluorescence Deconvolution with Deep Priors*
Society of Photographic Instrumentation Engineers (SPIE) West, February 2020
Joint work with Michael Kellman, Emrah Bostan, and Laura Waller.
<https://doi.org/10.1117/12.2545041>
- [4] *Memory-Efficient Learning for Unrolled 3D MRI Reconstructions*
International Society of Magnetic Resonance in Imaging (ISMRM) Workshop on Data Sampling & Image Reconstruction, January 2020
Joint work with Michael Kellman, Jon Tamir, Emrah Bostan, Michael Lustig, and Laura Waller.
Recording of talk: <https://youtu.be/Aypmy0lqVK8>
- PREPRINTS**
- [5] *A Scalable Training Strategy for Blind Multi-Distribution Noise Removal*
Kevin Zhang, Sakshum Kulshrestha, Christopher A. Metzler
<https://openreview.net/pdf?id=Jpctg2jSnMA>, 2022
- [6] *MetaDIP: Accelerating Deep Image Prior with Meta Learning*
Kevin Zhang, Mingyang Xie, Maharshi Gor, Yi-Ting Chen, Yvonne Zhou, Christopher A. Metzler
<https://arxiv.org/abs/2209.08452>, 2022
- RESEARCH EXPERIENCE**
- UMD CP Computational Sensing Lab** **Aug 2021 -**
Graduate Research Assistant
- Working on fusing RGB and imaging sonar data with deep learning.
 - Developed training strategy to train denoisers to denoise noisy images across multiple noise parameters with consistent performance and built optical setup to validate the method on real data [6].
 - Accelerated fitting Deep Image Prior and related architectures using Model Agnostic Meta-Learning to solve inverse problems like denoising quickly without training data. [5]
 - Co-advisors: Professor Christopher Metzler, Professor Jiabin Huang
- Berkeley Computational Imaging Lab** **Aug 2018 - May 2020**
Research Assistant
- Utilized invertibility of deep neural networks to enable memory-efficient deep learning for large-scale computational imaging problems. [1,2,4]

- Implemented 3D convolutional neural networks using PyTorch to deconvolve + denoise 3D MRI images. [1,2,4]
- Applied convolutional neural network as a deep image prior for the task of 3D fluorescence deconvolution. [3]
- Advisor: Professor Laura Waller

TEACHING
EXPERIENCE

**Discrete Mathematics and Probability
Theory (CS 70)**

Teaching Assistant

**Jan - May 2020, Sep - Dec 2019,
Jan - May 2019**

Taught weekly discussion sections, held office hours, developed course content, maintained course website, and helped facilitate online lectures.

Grader

Jun - Aug 2018

Graded students' weekly homeworks.

WORK
EXPERIENCE

Google

Software Engineering Intern

Jun - Aug 2019

- Added experimental AR features for helping drivers and riders find each other to Google's ridesharing SDK's test app built using Android framework (ARCore, Java, XML).
- Built a microservice to facilitate communication about current position between driver test app and rider test app using Python (Flask) and Google Cloud Platform.

PROJECTS

Ear Training App

Full-stack Web App

July 2019 - Present

- Hosted at <https://ear.kevinwzhang.com>
- Developed quiz application in HTML/CSS and JavaScript to test functional knowledge of chords and harmony.
- Utilized machine-learning based pitch detection algorithm from ml5.js to create a musical harmony quiz which the user must complete through singing.
- Wrote backend using Firebase that allows users to save customized chords.

CS 170 (Algorithms) Final Project

Approximation Algorithm

Oct - Nov 2018

- Created an algorithm to approximate the solution to an NP-hard problem detailed here: <https://bit.ly/33S12Xq>.
- Implemented and parallelized the algorithm using Python and Go.
- Approach taken combined algorithmic techniques like integer linear programming, hill climbing, simulated annealing, and backtracking/caching.
- Achieved 2nd place out of 306 teams.

TECHNICAL
SKILLS

Languages: Python (PyTorch, NumPy, SciPy, Matplotlib, OpenCV-python), Java, Bash

Other technologies: Unix, Git, Jupyter Notebook, Vim

Graduate Coursework: Information Theory, Linear Systems, Low-dimensional Models of High-dimensional Data, Real Analysis

Undergraduate Coursework: Data Structures, Algorithms, Probability Theory and Random Processes, Optimization, Real Analysis, Abstract Algebra, Linear Algebra, Complex Analysis, Machine Learning