

November 9, 2020

CONTACT INFORMATION

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EDUCATION

PhD in Applied Mathematics 2019 - Present
University of California, Los Angeles
Research Interests: Physics/PDE based computer graphics for animations and simulations,
Graph based Machine Learning Algorithms, Image Processing

Master of Arts in Mathematics 2016 - 2019
University of California, Los Angeles
Departmental Scholars Program

Bachelor of Science in Mathematics of Computation 2015 - 2019
University of California, Los Angeles
Math Undergraduate Merit Scholar
Graduated Cum Laude

RESEARCH

Research Intern Jun-Aug 2018
Research in Industrial Projects for Students (RIPS) 2018
Institute for Pure and Applied Mathematics (IPAM)
Los Angeles, CA

- Worked on a research team that build automated video augmentation pipeline that identifies crowd regions in sport videos and overlays an advertisement onto these regions, so that the advertisement looks aesthetic and natural for human perspective. This video link is an example of the final product.
More explicitly, the automated video augmentation pipeline is able to
 - identify non-homogeneous textures (i.e., crowd regions in sports stadium imagery),
 - overlay a rectangular image asset on said region,
 - and constrain the asset to be placed in a perspective correct way for an overall enhanced user experience.
- Designed and implemented an algorithm to visualize RGB-Depth image frame in 3D. Implemented *Random Sample Consensus Algorithm* in this 3D-reconstruction to detect planes to overlay advertisement onto the image in 2D.
- Developed a novel metric on video frames for the evaluation of the *PSPNet* crowd segmentation algorithm.

- The research paper "Augmented Reality for Non-homogeneous Textures" won "The Best Poster Award" in 1st International Workshop on Advanced Machine Vision for Real-life and Industrially Relevant Applications (AMV2018).

Undergraduate Researcher

Jun-Aug 2017

California Research Training Program in Computational and Applied Mathematics

UCLA Applied Mathematics REU

Los Angeles, CA

- Worked on a research team that applied image processing techniques to extract non-content-based features from LAPD body-worn-camera video recordings and used machine learning to classify the recordings into categories.
- Modified the old machine learning model to accept the new dataset of LAPD videos. Experimented with tuning hyperparameters and reduced the error by 50%.
- Created color-based feature and its metric system for video frames and implemented in the ML Algorithm.
- The research paper is submitted to arXiv:1904.09062.

TEACHING

Teaching Assistantship

September 2019 - Current

UCLA Mathematics Department

Los Angeles, CA

- **2020 Fall:** Math 266A: Graduate Level Applied Ordinary Differential Equations with Dr. Marcus Roper
- **2020 Fall:** Math 170E: Introduction to Probability and Statistics 1: Probability with Dr. Kyeongsik Nam
- **2020 Summer:** Math 170E: Introduction to Probability and Statistics 1: Probability with Dr. Enes Ozel.
- **2020 Spring:** Math 170E: Introduction to Probability and Statistics 1: Probability with Dr. Hung Nguyen.
- **2020 Winter:** Math 170E: Introduction to Probability and Statistics 1: Probability with Dr. Benjamin Harrop-Griffiths
- **2019 Fall:** Math 170E: Introduction to Probability and Statistics 1: Probability with Dr. Swee Hong Chan.

Math Olympiads Lecturer & Curriculum Designer

Sep 2017 - April 2020

Star League, Inc

Irvine & Cupertino, CA

- Organized curriculum and problem set for the 3-week AIME preparation summer program.
- Lectured math olympiad courses in AMC 8/10/12 and AIME levels throughout 12-week semester-long sessions and 3-week summer camps. Presented problems from earlier years' math olympiads competitions.

Assistant Instructor

Sep 2018 - June 2019

Los Angeles Math Circle (LAMC)

Los Angeles, CA

- LAMC is UCLA based K12 enrichment program.

- Supervised advanced high school students in weekly problem solving sessions.

PROGRAMMING

PYTHON, MATLAB, C++, C, L^AT_EX, JAVASCRIPT, ASSEMBLY

HONORS & AWARDS

- Putnam Performance Prize by UCLA Mathematics Department, 2019
- Honorable Mention at William Lowell Putnam Mathematical Competition, 2018.
- Richard F. Arens Putnam Scholars Undergraduate Award, 2016
- Sole recipient of UCLA Math Undergraduate Merit Scholarship in class of '19
- Gold Medal at International Mathematical Olympiad, 2014, South Africa
- Special Prize at European Union Contest for Young Scientist, 2014, Poland
- Gold Medal with perfect score at Balkan Mathematical Olympiad, 2014, Bulgaria
- Silver Medal at International Mathematical Olympiad, 2013, Colombia
- First Prize at Turkish National Science Fair, 2014, Ankara
- 3 gold and 2 bronze medals at Turkish National Mathematical Olympiads, 2009-2014

PUBLICATIONS

- H. E. Wong, O. Akar, E. A. Cuevas, I. Tabian, D. Ravichandran, I. Fu, and C. Carter, *Markerless Augmented Advertising for Sports Videos*, 1st International Workshop on Advanced Machine Vision for Real-life and Industrially Relevant Applications (2018), 2018, Perth, Western Australia, arXiv:1907.09394
- Honglin Chen, Hao Li, Alexander Song, Matt Haberland, Osman Akar, Adam Dhillon, Tiankuang Zhou, Andrea L. Bertozzi, P. Jeffrey Brantingham, *Semi-Supervised First-Person Activity Recognition in Body-Worn Video*, submitted, arXiv:1904.09062, 2019