ANDREW PORT

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github.com/mathandy
mathandy.ai

PhD Student in **Computer Engineering**, *UC Santa Cruz*
M.S in **Applied Mathematics**, *UC Davis*
B.S in **Mathematics**, *Worcester Polytechnic Institute*
Northfield Mount Hermon High School

PROFILE

Researcher and PhD student working in UCSC **Computer Vision** Lab on **deep learning** models for a variety of tasks. Strong background in **mathematics**. Expert **python** coder. Confident with writing and communication.

EDUCATION

PhD Student in **Computer Engineering**, UC Santa Cruz
Thesis: to be on deep methods for sensory substitution
M.S. in **Applied Mathematics**, UC Davis, 2012
Thesis: *An Introduction to Homological Mirror Symmetry Through the Case of Elliptic Curves*
B.S. in **Mathematical Sciences** w/ High Distinction, Worcester Polytechnic Institute Worcester
Thesis: *A One-Dimensional Viscoelastic Cell Motility Model*
~Winner of the WPI Provost Major Qualifying Project award for Mathematical Sciences
~ Graduated with High Distinction

RECENT EMPLOYMENT

(2017-Current) **Researcher @ UCSC Computer Vision Lab: UC Santa Cruz**
Design and develop deep learning and computer vision models for indoor localization, ecological applications, and assistive devices. Please see mathandy.ai, for details on my current projects.

(2019 Summer and Fall) **Computer Vision Research Intern @FXPAL**
Proposed, developed, and patented a methodology for using machine-learned features in assistive devices. This work involved both LSTM models for speech recognition as well as convolutional neural networks for image embedding, facial recognition, and audio synthesis.
Recipient of the "esteemed judges' choice" award @ FXPAL 2019 Hackathon.

(2018-2019) **Senior Technology & Software Intern @ Rare.org**
Designed and developed a deep learning-based computer vision technology for monitoring fishery spatial population distributions for use in Belize and Honduras. This work required the development of convolutional neural network models for semantic segmentation, contour-based image classification, keypoint detection. Collaborated with field biologists and others to design data collection kits and procedures which were successfully used by local fishermen.
Media coverage: https://news.ucsc.edu/2019/07/conservation-ai.html

SELECT PUBLICATIONS AND PATENTS

- C. Kim*, A. Port*, M. Patel, *Face-to-Music*, CVPR Sight and Sound (2021)
- Port, C. Kim, M. Patel, *Deep Sensory Substitution*, submitted to WACV (2021)
- Andrew Allan Port, Doga Buse Cavdir, Chelhwon Kim, Mitesh kumar Patel, Donald Kimber, Qiong Liu. *Transmodal Translation of Feature Vectors to Audio for Assistive Devices*, US Patent No. US11069259B2, July 2021
- A. Port, D. Cavdir, C. Kim, M. Patel, D. Kimble, *Transmodal Translation of Feature Vectors to Audio for Assistive Devices*, JP Patent No. JP2021056499A, Published April 2021, Pending
- B. Constanz, A. Port, R. Senock, *Comparing Automatically Generated and Manually Measured Tree-Ring Transects of Growth Trends with Hawaiian Sandalwood as an Example Species*, Dendrochronologia (2021)

NOTEWORTHY INDEPENDENT PROJECTS

svgpathtools (2016): Creator of the somewhat popular (166,000+ downloads from PyPI) and actively contributed to library of object-oriented tools for manipulating SVG Path objects and Bezier curves in Python -- https://pypi.python.org/pypi/svgpathtools

HONORS AND AWARDS

FXPAL Hackathon Esteemed Judges' Choice Award – Awarded for deep learning related research. More details to be added pending patent and paper publication.

NSF VIGRE Summer Graduate Fellowship – Awarded for research in geometric invariant theory by the UC Davis Mathematics Department.

WPI Provost Major Qualifying Project award for Mathematical Sciences – Awarded for research modeling fibroblast cell movement. This is the WPI math department's version of a "best senior thesis" award.

TEACHING EXPERIENCE

(2017-Current) **Teaching Assistant @ UCSC Computer Vision Lab: University of California, Santa Cruz**
TA for seven courses including Digital Signal Processing, Probability and Statistics for Engineers, Logic Design Laboratory, Computer Systems and Assembly Language, Personal Computer Concepts: Software and Hardware, and Programming Abstractions: Python

(2013-2017) **Adj. Professor of Mathematics and Statistics @ Sacramento City College**
Taught approximately twenty full courses including Arithmetic, Pre-Algebra, Algebra, Algebra II, Trigonometry, and Introduction to Probability and Statistics

(2007-2012) **Associate Instructor @ UC Davis**
Taught five full courses including Vector Analysis, Linear Algebra, Differential Equations, and Calculus for the BioSciences

(2007-2012) **Teaching Assistant @ UC Davis**
Prepared and taught weekly discussion sections for 27 ten week long courses and acted as TA for 30 courses in total. Including: Vector Analysis, Linear Algebra, Real Analysis, Topology, Euclidean and Non-Euclidean Geometry, Complex Analysis, Linear Algebra Computer Lab, Short Calculus, Calculus, and Calculus for the BioSciences

SERVICE AND OUTREACH

EOPS Professor – Taught a three semester sequence of basic math courses (Pre-Algebra, Algebra, Algebra II) for Extended Opportunity Programs and Services (EOPS) at Sacramento City College.

Organizer of Student-Run Geometry/Topology Seminar @ UC Davis, Fall 2009–Spring 2011