

ANDREW PORT

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github.com/mathandy
port.codes

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

PROFILE

Deep learning and computer vision engineer w/ research experience in geometry and deep learning. Experienced with difficult classification problems, instance segmentation and segmentation using geometric priors, transfer learning, generative models, and data augmentation. 9+ years Python experience. 5+ years experience w/ TensorFlow and other popular computer vision libraries.

RECENT EMPLOYMENT

(2017-Current) **Researcher & TA @ UCSC Computer Vision Lab: UC Santa Cruz**

- Created exit sign (quadrilateral) detection system for indoor localization using Mask-RCNN w/ custom post-processing step. Achieved pixel-perfect accuracy superior to the rough ground truth trained on.
- Created a custom CNN-based classifier used by ecologists to monitor invertebrate populations in rivers.
- Created software tools automatically generate and analyze tree ring transect measurements using SVG-Path tracings of tree cross-sections.
- Designed and helped maintain GPU server for shared lab use

(2019 Summer and Fall) **Computer Vision Research Intern @ FXPAL**

- Invented a novel method of sonification using a metric-preserving generative adversarial network. The model showed it's possible to automatically learn an encoding from machine learned features into seemingly any audio dataset with near zero metric-preservation error. This has applications in sonification and sensory substitution.

(2018 Summer) **Senior Technology & Software Intern @ Rare.org**

- Designed and developed computer vision technology to help fishermen in Belize and Honduras identify the origin of fish that had already been brought to land. The goal being to enable the protection of overfished areas.
- Built a custom background for fishermen to take photos against. This enabled color correction and image rectification.
- Built a pipeline to color correct, rectify, segment, and classify the images taken by the fishermen.

(2013-2017) **Adj. Professor of Mathematics and Statistics @ Sacramento City College**

- Taught mathematics and statistics courses at both high school and college levels.
- Extended Opportunity Programs & Services (EOPS) professor

NOTEWORTHY INDEPENDENT PROJECTS

svgpathtools (2016): Creator and maintainer of a somewhat popular (e.g. see [pystats](#)) and actively contributed-to library of tools for manipulating SVG Path objects and Bezier curves in Python

RECENT 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* [CN Patent No. CN113515188A](#) (published October 2021); [JP Patent No. JP2021056499A](#) (published, April 2021); [US Patent No. US11069259B2](#) (granted, July 2021)
- B. Constanz, A. Port, R. Senock, Comparing Automatically Generated and Manually Measured Tree-Ring Transects of Growth Trends with Hawaiian Sandalwood as an Example, *Dendrochronologia*, August 2020