amt6@williams.edu
alextrevithick.github.io
Github

# Alex Trevithick

## Education

**Williams College**, Williamstown, MA — August 2017 - May 2021 (expected)

Bachelor of Arts, Computer Science and Mathematics; GPA: 3.92

**University of Oxford**, Oxford, UK — October 2019 – June 2020

Williams Exeter Programme at Oxford; GPA: 4.0

**The Hotchkiss School**, Lakeville, CT — August 2015 - June 2017

*Cum Laude*

## Publications

GRF: Learning a General Radiance Field for 3D Scene Representation and Rendering

***Alex Trevithick***, Bo Yang

arXiv preprint 2020 arXiv:2010.04595

## Research Interests

Generalization in 3D Reconstruction, Neural Scene Representations, Theories of Deep Learning

## Research

**Summer Research Fellow** – Williams College — August 2020

- Researched implicit representations and Neural Tangent Kernel of MLPs with periodic activations

**Wilmers Fellow** – University of Oxford — May 2020 – August 2020

- Researched generalization in neural scene representations with Bo Yang
- Extended neural radiance fields to predict novel scene representations in a single forward pass

**Research Experience for Undergraduates** – Washington State University — May 2019 – August 2019

- Researched brain-computer interaction for architectural manipulation in the lab of Mona Ghandi
- Implemented ensemble model with input from multiple modalities for emotional recognition in real time

**High School Honors Science Program** – Michigan State University — June 2016 – August 2016

## Teaching Experience

**Teaching Assistant in Measure Theory & Hilbert Spaces** – Williams College — 2020

- Hold seven review sessions per week to present solutions to hardest problems

**Teaching Assistant in Introduction to Computer Science** – Williams College 2019

- Administer Python programming lab help for seven hours per week and grade student labs

**Teaching Assistant in Computational Linear Algebra** – Williams College 2018

- Grade problem sets in R and hold weekly help session

## Industry Experience

**Data Analyst Intern** – Haystack Search, Brooklyn, NY June - Aug 2018

- Cleaned and analyzed data with SQL for predictive analytics and hyperlocal product search

## Technical Skills

Python (TensorFlow, Jax), CUDA, Java, C, SQL

## Awards

**2020** Robert G. Wilmers, Jr. 1990 Fellowship

**2020** Williams College Summer Research Fellowship

**2019** John Houghton Harris Memorial Scholarship

**2018** Alumni-Sponsored Internship Program Grant

**2017** Amherst College $20,000 Schupf Scholarship for Research (nominated)

## Projects

**Periodic Activations with Neural Tangents** (Code) 2020

- I investigated the induced Neural Tangent Kernel of a novel implicit scene representation architecture which has a periodic activation only in its first layer. To validate this both empirically and in theory, I perform image regression from sparse inputs, elucidating the scale hyperparameter.

**ChessAI** (Code) 2020

- I implement fail-safe alpha-beta pruning with quiescence search for arbitrary two-player games and construct a novel chess heuristic for automated chess playing.

## References

- Bo Yang, Assistant Professor at The Hong Kong Polytechnic University, bo.yang@cs.ox.ac.uk
- Cesar Silva, Hagey Family Professor of Mathematics at Williams College, csilva@williams.edu
- Leo Goldmakher, Assistant Professor at Williams College, leo.goldmakher@williams.edu