Evangelie Zachos

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Interests

Inverse problems, PDEs, data science, statistics and probability, statistical inference, machine learning, imaging, computer vision, audio, RF communications.

Education

2015-20 **PhD in Mathematics**, *Stanford University*, under supervisor Andras Vasy.
Dissertation: "The X-Ray Transform On Asymptotically Euclidean Spaces"
Research interests: microlocal analysis and inverse problems

- main project: focused on inverting the x-ray operator in asymptotically Euclidean space
- developed a new calculus to understand operator ellipticity in this new noncompact setting
- substantial reading in related fields, such as scattering theory, Fourier Integral Operators

Sampling of Applied Courses: Algorithms, Machine Learning Algorithms, Deep Learning, Bayesian Networks.

- course project: tuned a CNN to detect sentiment of audio sentences
- other coursework coding projects included computer vision, RNN, and statistical inference

2014-2015 **Independent Study on Homogeneous Spaces and Spectral Geometry**
Universität Bonn, Bonn, Germany with supervisor Werner Ballmann

2010-2014 **A.B. Mathematics, magna cum laude**
Princeton University, Princeton, NJ
Independent work on Riemannian symmetric spaces and generalized spaces of nonpositive curvature

Career History

2020 Su. **Software Engineering Intern**, Innovation Labs, Cisco

- used MATLAB to assist with the decoding and analysis of wifi packets collected via SDR
- wrote visualization code in python to sync timestamps of packets from OTA packet capture to SDR timestamps and to detect packets in one or the other
- built datastream and tuned neural network to replicate MATLAB decoding of wifi packets

2015-20 **Course Assistant**, Stanford University

- courses included Differential Theory of Curves and Surfaces, Elementary Number Theory, Introductory Analysis and Linear Algebra, ODEs, and Fundamental Concepts of Analysis
- was lauded by students for using examples, intuitively explaining abstract concepts, and tailoring teaching to students' individual needs and backgrounds

2018 Su. **Counselor** in the Topology program at Stanford University Mathematics Camp,

2016 Su. **Apprentice Instructor at MathILY**, *Bryn Mawr*
Taught week-long courses on algebraic geometry, information theory, and noneuclidean geometry.
Assistant taught a course on polytopes.

2014 Su. **Junior Staff at Hampshire College Summer Studies in Mathematics (HCSSiM)**
Assistant taught the basic workshop course and the rubix-cube based group theory maxi-course.
Taught a mini-course on symmetries of the plane and hyperbolic space.

Awards and Honors

2014 **Election to Phi Beta Kappa**

2014 **Fulbright Student Award** for a year in Germany

2014 **NSF Graduate Research Fellowship** in Geometric Analysis

2011 **Shapiro Prize for Academic Excellence**, Princeton University

Skills

Programming Experience: Python, MATLAB, Java. Knowledge of machine learning algorithms and tensorflow.

Languages: English (native), German (functional), Greek (intermediate), Japanese (enthusiast/beginner).