

# EVANGELIE ZACHOS

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## INTERESTS

Machine learning, signal processing, inverse problems, data analytics, statistical inference, audio, unsupervised learning, RF network communications.

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## CAREER HISTORY

2020/12 - **Junior AI and DSP Scientist**, Rajant

- performed data analytics and clustering for a variety of applications, including machine telemetry, audio classification, and human activity classification
- created ML Ops prototypes for pre-processing and feature extraction for modular ML pipelines
- developed scenario scripts and preliminary interfacing of C++ routing algorithm with Mathworks Network Simulator for mesh radio networks
- applied signal processing to a variety of applications, including motion sensor fusion, PPG signals, and audio for medical diagnostics
- provided iOS app development, testing, and design incorporating publisher-subscriber type-agnostic data flows and live-updating plotting

2020/6-9 **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 Introductory Analysis and Linear Algebra, ODEs, Differential Theory of Curves and Surfaces, Elementary Number Theory, 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

2014,6,8 **Summer Junior Instructor** at summer programs for mathematically talented high school students (SUMaC, MathILY, HCSSiM), teaching courses on topics including topology, information theory, noneuclidean geometry, group theory, and algebraic geometry

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## SKILLS

**Programming Languages, proficient in:** Python (including Jupyter), MATLAB, Swift and **familiar with:** C++, Java. Experience with tensorflow, spark, scikit learn.

**Languages:** English (native), German (functional), Greek (intermediate), Japanese (lower intermediate).

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## EDUCATION

2015-20 **PhD in Mathematics**, *Stanford University*, under supervisor Andras Vasy.

Dissertation: "The X-Ray Transform On Asymptotically Euclidean Spaces"

- 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, RNNs, 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