

## EDUCATION

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### University of Pittsburgh

Bachelor of Science in Mathematics — Dietrich College of Arts and Sciences

Minor in Computer Science — School of Computing and Information

University of Miami: 14 Credits — College of Engineering

**Relevant Coursework:** Machine Learning, Natural Language Processing, Sports Data Science, Algorithm Design, Data Structures, Computational Neuroscience, Mathematical Probability and Statistics, Single and Multi-variable Real Analysis with Metric Spaces, Partial and Ordinary Differential Equations, Linear and Abstract Algebra.

Pittsburgh, PA

Expected April 2019

GPA: 3.94/4.00

GPA: 4.00/4.00

## WORK & RESEARCH EXPERIENCE

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### PittGrub: Smart Notification System Development

December 2017 - Present

*Undergraduate Researcher | PittGrub Team, ADMT Labs*

- Design notification system for PittGrub (food-waste prevention start-up). Employ reinforcement learning and a valuation model to manage user prioritization under constraint by framing notification as a Knapsack Problem.
- Collaborated in development of system prototype and a comprehensive simulation environment for experimentation
  - Poster presentation and publication (ADS Track, 2018 ACM SIGKDD, doi:10.1145/3219819.3219836)
- Presented in start-up competition and won \$5000, 3rd place award for PittGrub (Kuzneski Innovation Cup, 2018).

### Large Scale Transit System Analysis

May 2018 - Present

*Undergraduate Researcher | Data/Systems Team, Pitt Smart Living Project*

- Model transit systems in 50 U.S. cities as spatially embedded, multi-layer networks using GTFS and GIS data.
- Collaborate in iteration of model/metric design, initial exploration of data, and automation of data cleansing.
- Develop infrastructure to construct model components/procedures including a partition of an areal bounding box, multiple transit networks from GTFS data, a spatial network embedding, and multiple types of Graph Laplacian.
- Presented a first iteration analysis of Pittsburgh, PA at the 3rd Mining Urban Data Workshop, 2018 ACM SIGKDD.

### Recitation Instruction (Data Structures & Intro. Python)

August 2017 - Present

*Undergraduate Teaching Assistant | SCI, University of Pittsburgh*

- Communicate course topics through weekly recitation lecture, supervised lab assignments, and office hours.

### Proximity and Location Data Projects

May 2016 - November 2017

*Undergraduate Researcher | Beacons Team, ADMT Labs*

- Developed a location-aware, disease-simulation mobile-app using Bluetooth/GPS to allow users to interact with each other and their surroundings based on proximity. Designed and developed app both client- and server-side.
- Implemented map projection of campus POIs and in-house library for common iOS Core Location functionality.

## INDEPENDENT PROJECTS

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### NBA Expected Points Model

November 2018 - Present

- Design, develop, and test neural network architectures to predict outcome of NBA plays for expected points model.
- Model play-sequence with LSTMs using angle/distance of players to basket and player embedding.

### NBA Spatial Metric Analysis

April 2018

- Processed and analyzed greater than 60 GB of NBA court spacing data using convex-hull based spatial metrics.
- Employed a Gaussian mixture model and regression analysis to identify league trends and outliers in play-style.
- Introduced a plus/minus regression to identify player play-style. Handled sparse data with Bayesian adjustment.
- Poster presentation at Cascadia Symposium on Statistics in Sports (CASSIS, 2018).

## TECHNICAL PROFICIENCY

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**Frequent:** Python — Keras, NumPy, Pandas, SciPy, Matplotlib, Seaborn, Scikit-Learn, Geopandas; T<sub>E</sub>X, Git.

**Recent:** Experience in MATLAB, Swift/Xcode, Java; Exposure to Bootstrap, SQL Alchemy, Flask, AWS.

## HONORS & SCHOLARSHIP

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**Honors Societies:** National Society of Collegiate Scholars, National Society of Leadership and Success.

**Scholarships:** Blumberg Scholarship for Mathematics, University of Miami President's Scholarship.