ANTHONY B. SICILIA

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EDUCATION

Pursuing a Bachelor of Science in Mathematics Expected Graduation May 2019
Dietrich College of Arts and Sciences
University of Pittsburgh, GPA: 3.97/4.00

HIGHLIGHTS

Interests: Machine Learning, Big Data, Data for Social Good, Sports Analytics, Applied Mathematics, Deep Learning, Network Science, Scientific Computation

Experience: Data Analysis, Machine Learning Solutions, Simulation, Modeling, Data Visualization, Technical Communication and Presentations, Scalable Development, Data-Centric and Location Aware Mobile App Development

CURRENT PROJECTS

Pitt Smart Living: Allegheny County Transit Network May 2018 - Present
within ADMT Labs; advised by Dr. Alexandros Labrinidis and Dr. Konstantinos Pelechrinis
submitted to MUD3 in conjunction with KDD 2018

- Developed a multi-layer, spatially embedded network which models the Allegheny County Transit System
- Used techniques in network science such as algebraic connectivity to analyze aspects of the transit system's quality
- Managed multiple data sources creating well-defined relationships for ease of analysis
- Designed a scalable code-base for easy modification of the model

◇ This project is contained within the Pitt Smart Living Project which is working towards a smart city economy and information ecosystem. More information available at: https://pittsmartliving.org/

PittGrub: Smart Notification System December 2017 - Present
within ADMT Labs; with project partner Mark Silvis; advised by Dr. Alexandros Labrinidis
poster to appear at KDD 2018

- Designed a framework for smart notification of users which employs mature machine learning techniques such as reinforcement learning
- Constructed a proof-of-concept prototype for this smart notification system
- Developed a comprehensive simulation environment for experimentation
- Currently planning infrastructure for integration with existing application and rollout of this system

◇ This project is contained within the PittGrub Project which connects hungry college students to free-food events in order to alleviate the impact of food-waste. More information available at: https://pittgrub.com/

PREVIOUS PROJECTS

NBA Spatial Metric Analysis April 2018
advised by Dr. Konstantinos Pelechrinis
poster to appear at the Cascadia Symposium on Statistics in Sports (CASSIS), August 2018

- Processed > 50 GB of NBA court spacing data to retrieve spatial metrics for offensive and defensive lineups
- Analyzed aggregate team spatial metrics from multiple perspectives; use of a Gaussian mixture model allowed for identification of league trends in spatial play-style as well as outlying teams
- Introduced a regression based ranking system to map spatial metrics of lineups to individual players; results indicate promise in use of the ranking as a heuristic for evaluation of a player's spatial play-style

ACC Men's Basketball Lineup Data Analysis February 2018 - April 2018
with project partner Andrew Earle; advised by Dr. Konstantinos Pelechrinis

· Scraped web for lineup data on out of conference teams in the ACC
· Aggregated lineup data by match-up to account for the wide spectrum of "talent" in out of conference games; this match-up data allowed calculation of adjusted offensive and defensive efficiencies for all lineups
◇ This project is pending further interest from University of Pittsburgh Basketball Coaching Staff.

Location Data Subprojects May 2017 - November 2017
within ADMT Labs; advised by Dr. Alexandros Labrinidis

· Developed proximity libraries within the lab, allowing for easy development of location aware mobile apps
· Performed geospatial analysis on the University of Pittsburgh Campus, including projection to the plane with minimal error in projection distances

FluSim May 2016 - August 2017
within ADMT Labs; advised by Dr. Alexandros Labrinidis

· Developed a disease-simulation mobile-application; this game uses Bluetooth and GPS to allow players to interact with each other and their surroundings based on proximity
· Worked with iBeacons and other facets of iOS location services
· Designed and developed both client- and server-side, establishing a data-pipeline for location information
◇ This project reached alpha release before lab priorities shifted. A working prototype exists.

ADDITIONAL EXPERIENCE

Course Teaching Assistant: Data Structures August 2017 - Present
within the Department of Computer Science, University of Pittsburgh

· Wrote and presented weekly recitation lectures on additional course material / supervised recitation lab work
· Held weekly office hours to assist students in comprehending material and working on course projects
· Developed key skills in technical communication, explaining topics to students with limited prior experience

COURSEWORK

Theory:	Real Analysis (with metric spaces), Multivariate Real Analysis, Partial Differential Equations, Ordinary Differential Equations, Mathematical Probability, Mathematical Statistics, Linear Algebra, Abstract Algebra, Discrete Mathematics
Application:	Machine Learning, Computational Neuroscience, Sports Data Analytics
Core CS:	Algorithm Implementation, Data Structures, Object Oriented Design

SOFTWARE PROFICIENCY

Currently Using:	Python with frequent use of the SciPy open-source ecosystem
Recent Experience in:	Swift / Xcode including Core Data, Core Location and other iOS services; MATLAB, Java, TEX, Flask-SQL Alchemy, Bootstrap, GitHub

HONORS / SCHOLARSHIP

Honors Societies:	National Society of Collegiate Scholars, National Society of Leadership and Success
Scholarships:	Blumberg Scholarship for Mathematics, University of Miami President's Scholarship
Dean's List:	Fall 2015, Spring 2016, Fall 2016, Spring 2017, Fall 2017, Spring 2018

ADDITIONAL ACTIVITIES

- Active member of Pitt PWC (Panthers for Wildlife Conservation) Present
- Attended seminar on the **Putnam Mathematical Competition** Fall 2017
- Attended seminar on mathematical physics within the **Laboratory of Axiomatics** Fall 2017