

# PhD Roadmap

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## 1 Plan of Study

### 1.1 Timetable for Graduation

**Milestone 0:** The first milestone I would like to hit is my survey/empirical study on Topological Metrics. As outlined in my comprehensive exam, I'd like to be able to submit this for publication by March 2021, specifically to IEEE Vis.

**Milestone A:** This next milestone will be the most direct in terms of a continuation of work. It is also heavily reliant on a strong paper resulting from Milestone 0. This milestone can easily lead to another paper. I will prioritize this Milestone A directly after Milestone 0.

**Milestone B:** This milestone will be prioritized after Milestone A. I assume that we will find numerous spots where machine learning can help with the computation of these metrics from Milestone 0

**Milestone C:** This milestone will be the last prioritized in the list. While I believe that this has a lot of potential, I think that it is the least thought out of the other milestones that we have. However, it also doesn't depend directly on milestone 0.

Completion of Milestone 0 and then resulting paper(s) from two out of the three Milestones above, I believe, will result in me producing an adequate thesis. I plan to be graduating by Spring 2022. I have attached the graphic which is available in my comprehensive exam document below.

### 1.2 Future Coursework

Currently, I do not plan to take any more courses at the university. This semester marks the last semester I need for completed coursework. Overall, through years of the PhD program here and with taking graduate courses back at SUNY Albany, I have found that most things that I would need to learn, I can learn from self-studying. While I appreciate that there may be some special topics courses that are relevant to my research, I still feel that reading research papers will be my main source of learning after this semester (especially since my topic has seen extensive research in just the past few years).

## 2 Professional Development

### 2.1 Teaching

Since starting here at the University of Arizona, I have taught a total of 7 semesters, the last one being Calculus 1. I have found that I have not taken this time for granted, and have learned quite a bit about how I effectively teach. I truly feel that my students would feel the same. That being said, I do not think I will be teaching at any point during the rest of my time here since my advisor will (most likely) continue to fund me on a DOE grant. However, I do see myself teaching for maybe one more semester towards the end of my career if I can secure a spot teaching Calculus II or Linear Algebra.

As for other teaching opportunities, I continue to tutor students in grades 6-12, as well as managing tutors that tutor at local charter schools (for grades 6-8).

### 2.2 Conferences

I already plan to attend conferences directly related to the work we do such as the IEEE Vis conference and the Symposium of Computational Geometry. Since my advisor is in the computer science department, often our papers are submitted directly to conferences rather than journals. This means I plan to attend any of the conferences where I will submit work, on top of the ones that I find interesting.

### 2.3 Internships

Currently, I have no plans for specific internships. Again, since my advisor will have funding over the summers, I plan to utilize that to the best of my ability to be able to push forward with my research. Of course, I'd be extremely interested in internships that directly involve topological data analysis.

### 2.4 Personal Ventures

Since beginning at the University of Arizona, I've co-founded a tutoring company which focuses on hiring graduate and undergraduate students as private tutors and as tutors for local charter schools. I will continue to work on this project throughout the remaining years with my business partner. This has been an invaluable experience in terms of my ability to lead, manage, and overall produce (what we believe) to be a fantastic product to these students.

Furthermore, I also have been working a visualization project that is designed for users who would like to do some exploratory analysis on music review data. I will continue to work on this project in my free time, and plan on publishing it as a new visual design tool to overcome the limitations of current review aggregation website.

