Spring 2018 Reflection

Who are you and what are you most curious about?

Spring 2018 was marked by piqued interest in applied mathematics as well as gained curiosity in in India's modern history.

Prior to this year, I was convinced I wanted to pursue pure mathematics. With Bioinformatics and Stochastic Modeling last semester and Statistical Learning and Dynamical Systems this semester, applied mathematics is an option I am willing to explore now. Statistical Learning was especially fascinating because it applies the concepts of Machine Learning from a statistical point of view. In the age of Big-Data, it was essential to become familiar with machine learning techniques to predict or correlate results based on data. Although I had some familiarity with Statistics before, I did not know much about the Dynamical Systems prior to the semester. The class was focused mainly on nonlinear systems and involved phase portraits, mathematical models, and introduction to chaos. By the end of the semester, though, it became one of my favorite classes. It was, by far, the most work I have put in any class in my college career. In terms of pure mathematics, Advanced Calculus II was an extremely challenge class. I learned several new concepts, and the course pushed me out of my comfort zone.

In terms of mathematical outreach, we hosted TU's 2nd Annual Hurricane MathFest, a math competition for high school students. It took an entire semester, and the support of numerous students and faculty members to host this competition. This lead to the beginning of a bimonthly High School Math Circle, where high school students interact with college students over interesting mathematical topics. These topics are based on mathematics that is fascinating, yet is not necessarily taught in a usual high school classroom. Lastly, for Pi Day, we provided free Pies and held an Integration Bee. In addition, I continued to grow as a Teacher Assistant for Calculus II this semester. Compared to last semester, I had a different experience. My tricks from last semester were not necessarily as effective, so I tried to innovate. Although I tried to teach differently, sometimes these new ways of teaching did not pay off. Yet, it was a learning experience and a step in the right direction. All in all, in terms of outreach and teaching, progress was achieved.

Apart from mathematics, I was enrolled in Writing for Professions and Music History II. In Writing for Professions, we made enhanced our CV/ Resumes, wrote several technical papers, and improved our presentation skills. Music History II was fascinating since we focused on the era of Classical and Romantic music and learned about Bach, Mozart, and Beethoven among numerous others. In terms of violin, I improved technically but the results were not as great as I personally expected. I did not practice as consistently as I would have liked but hopefully, I will improve in this regard next semester.

Finally, my focus for the majority of the semester outside of regular class was on India's modern history. Last December, I finished reading *India After Gandhi* and spent the rest of the

semester analyzing this book. The author wrote, “Why India Survives” as the title of the book’s epilogue. This question particularly intrigued me. In order to analyze this epilogue, I wrote four essays on contextualizing India’s history. I was curious to learn how the efforts of the founding fathers impacted modern-day India. In addition, how India’s democracy has evolved is astonishing. Although it is not as ideal as imagined earlier, it is not as flawed as some predicted either. This journey over the past few months included participating in several discussions (with family, friends, and faculty), watching interviews and videos of historians and statesmen, and even communicating with the author of the book, Ramachandra Guha. I have learned that India’s complex society and diversity is an Achilles’ Heel to India’s survival. Yet, the Achilles’ Heel is also India’s biggest strength. It is the idea of India and its belief in secularism and diversity that makes India a unique nation-state. My next goal is to read about India’s Constitution in detail as well as biographies on individual leaders. Although my goal is to become a mathematician, because of this Honors Plan, I have a desire to serve both India and the U.S. in some way or fashion in the future as well.