Summary of Teaching Experience

I have sought to mentor and develop students during my PhD experience in three ways: (1) **Classroom Teaching:** I worked as a Teaching Assistant for three semesters at USC (2) **Direct Mentorship:** I have mentored over 32 undergraduate and masters students throughout my PhD, including running a mini-lab of 27 undergraduate students over the last year (3) **Educational Innovation:** I partnered with professors at USC Annenberg to introduce my research on *news discourse* into a classroom and study how it improves the skills of student journalists.

My teaching is informed by the different pedagogical approaches from different disciplines I experienced prior to entering my PhD. As a **former professional musician** who trained at the Juilliard School of Music, I engaged in a rigorous, repetition-based style of learning. As **a former journalist** at *The New York Times* and a Columbia Graduate School of Journalism student, I have participated in experiential field training. Finally, as **an undergraduate at Columbia University** experiencing the Core curriculum, I have participated in a broad variety of classes, including flipped-classroom and Socratic dialectics. This spectrum has exposed me to the strengths and weaknesses of these different teaching approaches; I have sought to integrate mixtures of all three in my teaching approaches.

Finally, an anecdote – I am extremely passionate about teaching and lecturing, and I have been commended for my approach: *"Alex's ability to captivate and connect with the audience was a sight to behold. The whole talk felt like an informal conversation between the presenter and 150+ people in the audience. That's definitely a skill and a bit of a talent to manage such a big crowd in a very conversational way, encouraging questions and sparking curiosity."* [Source].

Classroom Experience: Teaching Assistant Roles

My experience as a teaching assistant (TA) across three semesters at USC has shaped my teaching philosophy. I served as a TA for both large and small classes, experiencing different classroom dynamics and responsibilities. In Spring 2020, I was a TA for a large Core Natural Language Processing class (200 students, master's level) that was taught remotely due to COVID-19; in summer 2024 I assisted in a similar-sized Data Science for Machine Learning course (50 students, master's level).

Teaching large cohorts of students taught me the value of breaking lessons down into small, skills-based segments. I developed hands-on demos to pair with my seminars; each demo taught a particular skill (e.g. accessing a cluster, managing Huggingface's LLM cache) that was essential for all students to reach the same baseline as coders. From there, I watched as they felt more comfortable and convinced by the theory presented in these courses. In this way, the pedagogy of a large class reminded me most of my conservatory music training at Juilliard.

The challenges of remote teaching during the pandemic provided valuable lessons in compassion and flexibility. Many students faced personal hardships, and it was essential to be understanding and accommodating in order to support their learning. I learned that consistent standards, combined with empathy and adaptability, are crucial when teaching large, diverse groups of students.

In Fall 2024, I took on a more hands-on role in a smaller, more specialized course—Advanced Natural Language Processing—taught by my advisor, Jonathan May (27 students, PhD-level). This course provided me with a comprehensive understanding of curriculum design, grading, and student engagement in a close-knit academic setting. I was responsible for writing and grading assignments, setting up autograders, and teaching a number of lectures. Additionally, I worked closely with students as they collaborated on group projects, offering guidance and feedback as they navigated research and teamwork.

In this smaller class, 50% of the instruction time was devoted to students, who were responsible for presenting research papers, which created a peer-to-peer learning environment. I found that my prior skills participating in Socratic dialectics and flipped-classrooms at Columbia University were most utilized. By designing a curricula that included guest speakers, project presentations, and interactive discussions, I helped ensure that each week of the class felt fresh and engaging. These are principles I will carry forward when designing my own courses.

Mentorship and Research Lab Development: The Rhythm Report

In the last year of my PhD, I mentored over 27 undergraduate students whom I recruited from USC, UC Berkeley and UCLA – I established my own mini research lab called the "Rhythm Report". I conceptualized eight different research projects spanning diverse areas, from journalism to music. I divided the students into teams of 3-4 and allowed them to take ownership of their projects by self-nominating as team leaders.

Before I started, my research advisor told me: *"mentoring 20 students means finding 20 different modes of mentorship"*. Indeed, this experience challenged to diversity my mentorship strategies. Some students excelled in communication, others in technical coding. I dove deep into providing starter code, setting up toy datasets, offering regular feedback, continual affirma-

tion and encouragement. I learned so much from them, and from their the diversity of perspectives, skills, and motivations.

In a way, I felt like I was taking these students out "into the field", and I drew heavily on my experience at Columbi School of Journalism and the *New York Times*. I could not predict what these students would experience in their research — the turns, revisions and evolution that a research project would take. The best I could do was be there consistently and solidly; I increasingly emphasized that my advice was human and not to be taken as gospel, and that independent thinking was necessary to foster adaptability.

The results of this mentorship have been substantial. Of the eight research groups that began in May 2024, three have submitted papers for publication in October; two more are expected to submit in December; another two by February. So far, all of the students who have submitted in October have reached out to me to do follow-up projects, indicating a high level of satisfaction. I have had numerous students tell me that "this has been a life-changing opportunity" and they were "so fortunate, as most PhD students have neither the time, interest or effective skills to guide students".

I feel deeply dedicated to each students' research developments, and I care about each student. I feel more motivated promote their work than I do my own, knowing that "my undergrads" will benefit. I feel deeply committed to their success, and have reached out to them continually (to the point of being a nuisance) to encourage them to apply for summer internships; I have worked hard to connect each to more senior faculty mentors aligning with their interests. This experience has shaped my desire to pursue an academic track, showing me how motivated I feel to be mentoring students.

Educational Innovation: News Discourse at USC Annenberg

One of my research threads involves using LLMs to study *discourse patterns* in writing. One output of this research has been models that can determine the roles sentences play in the overall structure of a news article (e.g. "Main Event", "Background"). I met Laura Davis and Rebecca Haggerty, journalism professors at USC Annenberg, while I was in the middle of this research; they immediately saw the potential to transform student writing. According to Laura, **helping students improve the structure of their writing is most common challenge experienced by journalism professors**.

We hypothesized that using discourse as a theoretical frame, we could analyze the structure of student writing using LLMs and give immediate feedback through a web interface. The benefits would be two fold: (1) students could see the overall structure of their writing mapped out, and judge whether it followed good form (e.g. if their main ideas were being expressed in the beginning or at the end of their piece). (2) If students intended to write a structural elements but the LLM could not detect it, then they can improve their writing style to be more clear.

Preparing for this project involved a large-scale analysis of student writing published through USC Annenberg's media center. I used my methods to infer a schema for student writing structure, and I built a web application interface to automatically score drafts of student writing. We conducted extensive human annotation efforts to ensure the tagging accuracy of LLMs was high for this task. Finally, we have obtained IRB to run a large-scale experiment in classrooms during the spring semester.

Being involved in educational research is exhilarating and unexpected. I never imagined I would be impacting students in this way. It also imposes additional demands and robustness criteria on my research. Prior to this work, I had primarily analyzed professional writing, which is higher quality and more uniform. Adapting my tools to student drafts requires additional analysis. However, the promise of positively affecting students with my work opens new directions for my research and is hugely fulfilling.

Future Expectations

As I transition into a tenure-track faculty position, my teaching philosophy will continue to evolve. I will build on the experiences that have shaped my approach so far—direct mentorship, adaptable teaching strategies, and fostering a collaborative and inclusive learning environment. Whether in the classroom or the research lab, my goal is to inspire students to pursue their academic and professional passions while providing them with the support and guidance they need to succeed. By prioritizing hands-on learning, interdisciplinary exploration, and personal development, I aim to prepare students to become leaders and innovators in the field of Information Sciences.