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Teaching Statement

As a graduate student, I have greatly benefited from advisors and mentors who have encouraged creative and critical thinking, and seen its positive impact as I became a more independent researcher. I took the same approach when interacting with undergraduate and graduate students at UT, in different teaching and mentorship capacities. I am eager to continue these efforts as a professor.

Teaching Experience In the classroom, my main goals are (i) cover fundamentals thoroughly so as to build a strong foundation, (ii) encourage student participation in classes and (iii) cultivate interest in the subject matter that they are encouraged to explore these topics outside of the course requirements and give them opportunities to do so. My teaching experiences at UT, highlighted below, have shaped my teaching approach towards these goals:

- **Teaching Assistant** I served as the TA for the undergraduate-level natural language processing course offered by the CS department. Apart from typical TA duties of grading and holding office hours, I also assisted in designing the homework assignments and the midterm exam. I took the initiative to adapt the coding assignments from the previous iterations of the course so that instead of manual grading, they could be deployed and autograded on Gradescope.[1] For their final class project, I brainstormed with different teams to help define problem statements and plan experiments. I also co-authored a paper discussing the design philosophy behind the curriculum of this course and its easy adaptability to both undergraduate and graduate levels; this paper was published at the TeachingNLP workshop at NAACL 2021 [1].

- **Undergraduate Reading Group** For the past few semesters at UT Austin, I have led small-sized (4-8 students) directed reading groups (DiRP) aimed at fostering interest in NLP amongst undergraduate CS students. I ran two parallel bi-weekly groups, beginner and intermediate NLP, to cater to different levels of experience. As the students in the intermediate group already had some classroom experience with NLP, I worked with them to tailor the paper reading list to cover their broad areas of interest. Beyond the subject matter, my objective here was to also advise them on how to *read* research papers and critically evaluate claims against supporting evidence. I also helped familiarize them with commonly used NLP libraries like HuggingFace.[2]

  With the beginner group, I opted for a lecture-style setting given how new the area was for most students. I focused on covering basics like feature engineering, binary/multi-class classification, etc. in the context of traditional NLP tasks. I worked to distill these concepts into simpler ideas while developing the materials here. Towards this, I found it useful to have hands-on modules whenever possible. For example, while talking about classification, I encouraged students to train their own binary classifiers using the Teachable Machines.[3] The tool allowed them to define their own classes, collect training samples and see their trained models in action. This exercise served a dual purpose; students found this much more engaging and it also allowed me to seamlessly transition into related topics of out of distribution test sets using their own example models. We also spent time interacting with online demos of NLP systems on the HuggingFace and AllenNLP[4] websites to both demonstrate the strengths of current systems and discuss some failure modes.

Through these experiences, I learned how to flexibly adapt my broad curriculum goals to students' interests and backgrounds. It was especially useful to gain experience in designing teaching materials for both seminars and lectures in these small group settings.

[1] https://www.gradescope.com/

[2] https://huggingface.co/

[3] https://teachablemachine.withgoogle.com/train

[4] https://demo.allennlp.org/

Teaching Plans I look forward to teaching undergraduate courses in NLP and ML, as well as introductory computer science courses. At the graduate level, I would be interested in teaching NLP courses, particularly around my research area of text generation and evaluation. I am particularly interested in developing a course focusing on the challenges of human evaluation of text generation, possibly with a hands-on component of designing and launching their own tasks on crowdsourcing platforms.

Mentoring and Advising I have been fortunate to work with both MS and junior PhD students on research projects in a mentoring role.

- I worked with Ryo Kamoi (MS student at UT Austin) on auditing factual error detection systems for generation models. Although we knew the high-level research area we were targeting, the problem statement itself was kept very open-ended with ample room for exploration. Since this was Ryo's first graduate research experience, I adopted a more hands-on approach with my mentorship and met with him regularly to discuss potential directions, plan experiments and break down tasks into smaller deliverables. I also helped him with technical writing, both while writing the paper for this project (currently under submission at EACL [2]) and his PhD applications. I have continued to advise him on follow-up research projects; it has been gratifying to see Ryo transform into a more confident and independent researcher through last year.

- I worked with Liyan Tang (PhD student at UT iSchool) on extending his NLP survey project on summarization evaluation into a broader research study. I helped him develop his ideas into a concrete research plan and gave feedback on experiments and analysis throughout the project. I also advised him on technical writing while preparing the paper (currently under submission at ARR [3]).

  In addition to technical guidance, I also helped Liyan in navigating the external collaboration with Salesforce researchers on this project. I regularly met with him 1:1 to provide guidance on how key findings should be presented to the larger group and helped convert vague high-level ideas into clearer discussion points for the meeting.

Approach to mentorship Through these mentoring experiences, I learned how to help students deal with the inherent uncertainty in research and keep them motivated. Also, I recognize the importance of adapting my mentorship style to match each student's background and experience; some students can function quite independently from the get go while others require a more hands-on approach in the beginning. As a professor, I look forward to charting different research journeys with individual students that ultimately lead to independent researchers capable of defining and executing their own research agendas.

In addition to prior research experience, other factors also influence what resources or guidance each student needs. For example, communicating ideas is a key part of research and international students can sometimes find themselves unfairly disadvantaged when English is not their first language. In my own experience, my advisor regularly gave detailed feedback on my technical writing in the beginning and I could see it improve with time. Additionally, I have also seen resources such as the graduate writing workshop at UT[5] benefit my peers. I will work to make such resources, when required, available to my students.

References

[1] Greg Durrett, Jifan Chen, Shrey Desai, Tanya Goyal, Lucas Kabela, Yasumasa Onoe, and Jiacheng Xu. Contemporary NLP modeling in six comprehensive programming assignments. *NAACL-HLT*, 2021.

[2] Ryo Kamoi, Tanya Goyal, and Greg Durrett. Shortcomings of question answering based factuality frameworks for error localization. *arXiv*, 2022.

[3] Liyan Tang, Tanya Goyal, Alexander R Fabbri, Philippe Laban, Jiacheng Xu, Semih Yahvuz, Wojciech Kryściński, Justin F Rousseau, and Greg Durrett. Understanding factual errors in summarization: Errors, summarizers, datasets, error detectors. *arXiv*, 2022.

[5] https://uwc.utexas.edu/services/workshops/