Shamindra Shrotriya - *Teaching Statement*

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For me, teaching is the ***ideal*** medium to both **deepen my understanding** of a given topic, and to also **enthusiastically inspire** my students to do the same. My main agenda as an instructor is to constantly strive to achieve these two complementary goals.

I appreciate however, that the (unwritten) teaching contract between me and my students is fundamentally asymmetric in its set up. That is, as the instructor I assume expertise in a given topic[1], as compared to my students who are often just beginning their learning journey in it. Therefore in order to effectively execute my teaching agenda, my primary task as an instructor boils down to reversing this asymmetry in the most efficient manner. I do this by planning my lessons using a principled approach driven by three key themes, namely:

1. **Theme 1:** *Establishing a **nurturing** and **inclusive learning environment**.*
2. **Theme 2:** *Emphasizing the **joy of discovery** in learning.*
3. **Theme 3:** *Presenting a given topic through **multiple perspectives**.*

I'll now unpack the precise philosophy behind each of the three themes and how I practically implement them. First, and most importantly, **Theme 1** signifies that the learning environment I develop as the instructor must be safe and inviting for all of my students. That is, students of all diverse social, and educational backgrounds should feel comfortable engaging with myself and each other, throughout the semester. To facilitate this, I begin by noting my preferred pronouns and encouraging students to address me by my first name, rather than using formal titles. I conversely encourage the students to let me know their similar preferences. This ensures that I remain approachable as their instructor, and that students feel valued and respected from the get-go. In the case where some students haven't quite met all of the prerequisites, I prepare additional supplementary materials on the course website. I also hold extra office hours to help such students get up to speed quickly. This ensures that such concerns are addressed in a professional yet personal manner, and therefore helps cultivate an inclusive learning atmosphere.

Next, in **Theme 2** I aim to convey to my students the **pleasure of discovering** the key technical concepts for themselves, and as a collective group. To that end, I typically employ a **non-linear presentation style** which states the main result up front. This could be a key theorem in statistics, or a polished data visualization, for example. This approach forgoes the traditional linear structure, i.e., building up to the main result as a conclusion. However, its key benefit is that it gives students a firm tangible goal to aim for throughout the lesson, which I periodically return to. The remainder of the lesson involves me simply guiding a discussion where I encourage the students to break down the key steps towards that goal. This helps them directly grasp the importance and fun in modular thinking during data science discovery. If students encounter challenges during this process, I jump in as needed to keep the momentum going. This involves me making many mistakes (sometimes even intentionally). By explicitly correcting such mistakes, I aim to normalize them as a fundamental part of the discovery process.

Finally in **Theme 3** it is important that students are able to grasp a concept through **different viewpoints**. To achieve this, I use a **combination of pedagogical tools** when presenting such concepts. For example, when teaching a mathematical concept such as the weak law of large numbers, I first jump to a live coding simulation. Here, a particular instance of this deep probabilistic fact can be interactively demonstrated using just a few lines of code and a simple plot. I then proceed to ask the students to help formalize the observed phenomenon precisely. I then present a polished version of the formal mathematical statement in the slide deck for comparison. Finally, to maintain the flow, I proceed to the chalkboard to derive the proof of the statement and the core techniques involved. The idea here is to showcase the underlying result using a variety of teaching techniques in order to appeal to the variety of preferred learning styles of my students.

My past teaching efforts have been recognized with an *Outstanding Graduate Student Instructor (GSI)* award at UC Berkeley, and the *TA of the Year* award at Carnegie Mellon University. I'm excited to take on new teaching opportunities to further refine and evolve this principled approach approach to teaching.

[1] Typically within the field of statistical machine learning, though my approach discussed here also applies to other fields.