Helping students learn and grow has inspired my desire to be a professor. During my graduate studies, I have taught **six courses** as a teaching assistant (TA), and one Advanced Placement (AP) CS course as an instructor. I have been a major contributor in **designing an NLP course taught at both Harvard and Technion from scratch**. I have also mentored three undergraduate students and two Ph.D. students. These experiences have helped me form a teaching philosophy consisting of four major components: Student Initiative, Principled Teaching, Applied Motivation, and Rigorous Guidance.

Student Initiative A recent Harvard study showed that students learn better in classrooms that employ active learning strategies compared to passive lectures [1]. Surprisingly, this study also found that students perceive themselves to learn less through active learning, possibly due to the increased cognitive efforts required. I believe that it is our responsibility as educators to engage students in active learning, help them overcome the initial hurdle of cognitive efforts, and reap the long-term benefits of active learning.

To engage students in active learning, when I participated in the design of an undergraduate class, we designed the course to focus on **in-class labs and off-class projects**, where students work on solving programming tasks during class, and a project after class. I have set up an auto-grading system such that students can submit their solutions and receive instant feedback. This class structure enables students to work at their own pace yet receive immediate feedback, both of which are essential for active learning. It turns out that students like this design: I received a rating of **5 out of 5** (department average being 4.52) in the anonymous TA evaluation.

Principled Teaching Learning sciences provide insight into what helps people learn most effectively [2]. In my teaching, I utilize these empirical findings to create more effective learning environments. In my teaching preparation, I follow the principles of backward design [3]: identifying learning objectives, designing assessments, and selecting course materials. To polish my teaching skills, I take classes offered by the Harvard Bok Center for Teaching and Learning every semester throughout my Ph.D. I follow educational research and participate in workshops to keep learning better teaching methods. I also solicit feedback from my students to improve my teaching. In recognition of my commitment to providing quality teaching, I have won **Harvard's teaching award every year for the past three years**

Applied Motivation "Effective learning in the classroom depends on the teacher's ability ... to maintain the interest that brought students to the course in the first place" [4]. Research has shown that motivating students boosts student engagement, persistence, and attainment [5]. In my teaching, I motivate students via two channels: first, I connect the materials to students' interests; second, I share my passion for the subject with my students.

I connect course materials to students' interests by using examples that are closely relevant to them. For example, in an AP CS class I taught, I found that many of my students loved to watch YouTubers. After students learned about sorting, I designed a homework assignment where students were asked to implement a YouTube video recommendation system, where ranking is based on a number of factors such as topic relevance and video popularity. Students enjoyed the assignment and found it helpful in understanding how sorting is used in the real world.

I show my passion for a subject by sharing how I use knowledge on that subject in my own research. For example, in my AP CS class, I offered an optional class to share with students how computer science is used in my current research on Natural Language Processing. I created an in-class activity to show how good the current technology is at generating short texts. The feedback I got from my students was very positive: to quote a student from an anonymous teaching evaluation, "... He is passionate about NLP and it shines through and helps us to have motivation to keep going..." I am also very proud that one of my students got admitted to Brown University with an intention to study computer science.

Rigorous Guidance Setting high expectations for students leads to better academic outcomes [6]. In my teaching and mentoring, I set high yet achievable standards, and provide clear expectations and feedback. When teaching students, I strive to make sure my students understand the fundamental theories and principles as opposed to just memorizing facts and procedures. When mentoring students, I guide my mentees through the rigorous hypothesis-driven research process: formulating a research hypothesis, reviewing the literature, designing and conducting experiments that can possibly falsify the hypotheses, and writing up the results. This process enables my mentees to develop strong critical thinking skills. I co-authored two papers with my undergraduate mentees at ICML [7] and NeurIPS [8]. One of my undergraduate mentees got admitted to the Ph.D. program at Stanford University; one joined Google, and the other Microsoft. One of my Ph.D. mentees has submitted a first-author paper to ICLR this year [9].

Rigorous teaching can also be inclusive and motivating. When I served as the head TA, I wrote scaffolding code and detailed instructions for the lab tasks and the project, so that students with different levels of experience could all succeed in the course. I also organized TA-led, impromptu, extra recitations based on students' feedback when students needed help on challenging subjects such as tensorized operations on GPUs. In addition, I offered individual office hours before major deadlines to help students who were struggling with the course. These efforts were well-received by the students. To quote some anonymous student reviews, "Sections were super useful and informative"; "... He did an amazing job designing the labs and problem sets to be manageable, and he was also the MVP of Piazza and things that seemed impossible to debug. His office hours were life–saving."

Teaching Interests

As a professor, I would be interested in teaching core courses in Machine Learning, Deep Learning, Natural Language Processing, Probabilistic Artificial Intelligence, and/or Symbolic Artificial Intelligence. I have experience in TA'ing and designing many of these courses already. I would also be interested in teaching advanced courses such as Deep Learning for NLP, Multimodal Machine Learning, and Topics in Large Language Models.

To make my classes more engaging and useful for students, I would continue to employ active learning strategies such as in-class labs, as well as follow principles established by pedagogy research such as backward design. I would make the learning experiences of my students more fun by connecting course materials to their interests. I would also continue to set high yet achievable standards, provide clear expectations, and give timely and actionable feedback.

References

[1] Louis Deslauriers, Logan S. McCarty, Kelly Miller, Kristina Callaghan, and Greg Kestin. 2019. Measuring actual learning versus feeling of learning in response to being actively engaged in the classroom. *Proceedings of the National Academy of Sciences*, 116(39):19251–19257.

[2] Arden N. Frandsen. 1962. Educational psychology: The principles of learning in teaching. *British Journal of Educational Studies*, 10(2):212–213.

[3] Amy Childre, Jennifer R. Sands, and Saundra Tanner Pope. 2009. Backward design: Targeting depth of understanding for all learners. *TEACHING Exceptional Children*, 41(5):6–14.

[4] Stanford C Ericksen. 1978. The lecture. *Memo to the Faculty. No. 60.*

[5] Jacquelynne S Eccles, Allan Wigfield, and Ulrich Schiefele. 1998. Motivation to succeed. *Handbook of child psychology: Social, emotional, and personality development*, pages 1017–1095.

[6] John Hattie. 2008. *Visible learning: A synthesis of over 800 meta-analyses relating to achievement.* Routledge.

[7] Yuntian Deng, Anssi Kanervisto, Jeffrey Ling, and Alexander M. Rush. 2017. Image-to-markup generation with coarse-to-fine attention. In *Proceedings of the 34th International Conference on Machine Learning*, volume 70 of *Proceedings of Machine Learning Research*, pages 980–989. PMLR.

[8] Yuntian Deng, Yoon Kim, Justin Chiu, Demi Guo, and Alexander Rush. 2018. Latent alignment and variational attention. In *Advances in Neural Information Processing Systems*, volume 31. Curran Associates, Inc.

[9] Richa Rastogi, Yuntian Deng, Ian Lee, Mert R. Sabuncu, and Volodymyr Kuleshov. 2022. Semi-parametric deep neural networks in linear time and memory. *arXiv preprint*, arXiv:2205.11718.

I have attached my anonymous teaching evaluations since 2019 on the following pages.[1] Both evaluations are for an undergraduate-level course, *Introduction to Computational Linguistics and Natural Language Processing* (CS187), taught at both Harvard and Technion. The first evaluation is for the year 2021, and the second evaluation is for the year 2020.

Background

CS187 is a new undergraduate course taught by Prof. Stuart Shieber at Harvard University and Prof. Yonatan Belinkov at Technion. To design this course, Prof. Shieber created a meta-course in which he and nine students, including me, constructed the curriculum and a draft of course materials. After this meta-course, I continued to participate in the course designing and teaching as **the head TA**. Together with Prof. Shieber and Prof. Belinkov, we created in-class labs, after-class project segments, and course infrastructure such as an auto-grading system.

Teaching Highlights

I was rated an overall score of **5 out of 5** in 2021 (department average being 4.52) and 4.95 out of 5 in 2020 (department average being 4.66). In addition, I received very positive feedback from my students. Here are some examples:

2021

- Yuntian is the AMAZING!!!! He is super super smart and knows the material like the back of his hand. He understands every question we have just by glancing at the code. He is very respectful in his delivery of the answer and cares to make sure that we understand WHY and not just WHAT, which I found very helpful going throughout the course. I am very grateful for him and his presence in the class. Thank you, Yuntian!
- Yuntian is incredible! He was always so helpful whenever I or a partner had a question, whether in class, OH, or on Ed. It's clear that he knows this material deeply and cares so much about student learning. Thank you for a great semester, Yuntian!

2020

- GIVE YUNTIAN A RAISE (or promotion, or whatever you can give to a grad student)!!!!!! He is easily the most knowledgeable, accessible, helpful, and kind teaching fellow I've had thus far. He did an amazing job designing the labs and problem sets to be manageable, and he was also the MVP of Piazza and things that seemed impossible to debug. His office hours were life–saving.
- Yuntian was extremely helpful throughout the semester, especially when I was confused about course content. He is very competent, explains concepts very clearly, and is very passionate about the material.
- Yuntian is the best CS TF I've had at Harvard. He's incredibly enthusiastic about the material and dedicated to helping students, and that shows in his excitement at office hours and his willingness to answer questions at all hours on Piazza. This course would not have succeeded without him.

A full list of student comments can be found in the last section of each teaching evaluation.

[1] Harvard switched to a new evaluation system bluera in 2019 and the old system is offline.

Fall 2021 Individual Report FAS-COMPSCI 187-Introduction to Computational Linguistics and Natural-language Processing 001 Yuntian Deng

Project Title: **2021 Fall Harvard FAS Course Evaluation**

Course Audience: **85**
Responses Received: **74**
Response Ratio: **87%**

Report Comments

Note:
The order that the questions appear on this report is not the same as the way the questions were displayed to students.
The order has been changed to make the report more readable.

Creation Date: **Tuesday, January 4, 2022**

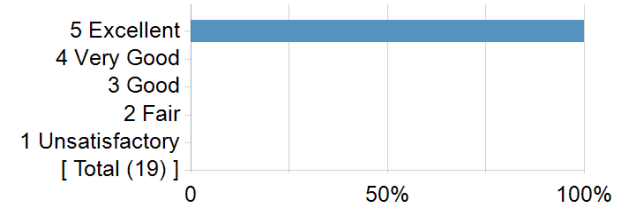
Evaluation of Section Leaders

Section Leader Questions

	Count	Excellent	Very Good	Good	Fair	Unsatisfactory	Instructor Mean	Dept Mean	Division Mean
Evaluate your Section Leader overall.	19	100%	0%	0%	0%	0%	5.00	4.52	4.54
Gives effective lectures or presentations, if applicable	13	100%	0%	0%	0%	0%	5.00	4.47	4.55
Facilitates discussion and encourages participation	14	93%	7%	0%	0%	0%	4.93	4.43	4.51
Is accessible outside of class (including after class, office hours, e-mail, etc.)	19	89%	11%	0%	0%	0%	4.89	4.53	4.55
Generates enthusiasm for the subject matter	18	78%	22%	0%	0%	0%	4.78	4.42	4.47
Gives useful feedback on assignments	15	87%	7%	7%	0%	0%	4.80	4.45	4.45
Returns assignments in a timely fashion	12	67%	8%	0%	8%	17%	4.00	4.31	4.37

Section Leader

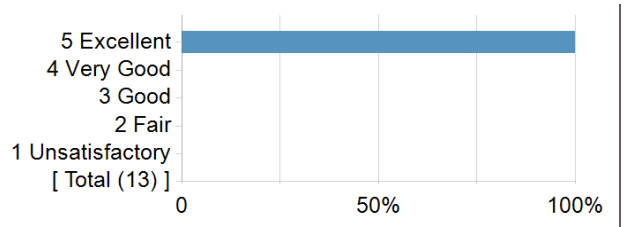
1. Evaluate your Section Leader overall.



Options	Score	Count	Percentage
Excellent	5	19	100%
Very Good	4	0	0%
Good	3	0	0%
Fair	2	0	0%
Unsatisfactory	1	0	0%

Statistics	Value
Response Ratio	22%
Mean	5.00
Median	5.00
Standard Deviation	0.00

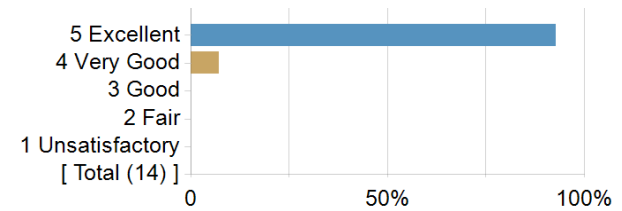
2. Gives effective lectures or presentations, if applicable



Options	Score	Count	Percentage
Excellent	5	13	100%
Very Good	4	0	0%
Good	3	0	0%
Fair	2	0	0%
Unsatisfactory	1	0	0%

Statistics	Value
Response Ratio	15%
Mean	5.00
Median	5.00
Standard Deviation	0.00

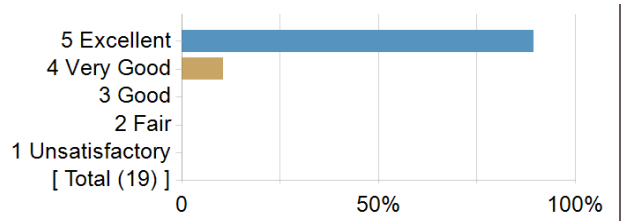
3. Facilitates discussion and encourages participation



Options	Score	Count	Percentage
Excellent	5	13	93%
Very Good	4	1	7%
Good	3	0	0%
Fair	2	0	0%
Unsatisfactory	1	0	0%

Statistics	Value
Response Ratio	16%
Mean	4.93
Median	5.00
Standard Deviation	0.27

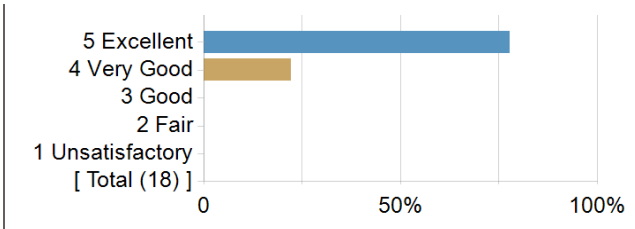
4. Is accessible outside of class (including after class, office hours, e-mail, etc.)



Options	Score	Count	Percentage
Excellent	5	17	89%
Very Good	4	2	11%
Good	3	0	0%
Fair	2	0	0%
Unsatisfactory	1	0	0%

Statistics	Value
Response Ratio	22%
Mean	4.89
Median	5.00
Standard Deviation	0.32

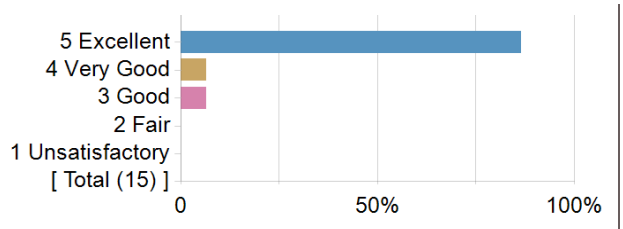
5. Generates enthusiasm for the subject matter



Options	Score	Count	Percentage
Excellent	5	14	78%
Very Good	4	4	22%
Good	3	0	0%
Fair	2	0	0%
Unsatisfactory	1	0	0%

Statistics	Value
Response Ratio	21%
Mean	4.78
Median	5.00
Standard Deviation	0.43

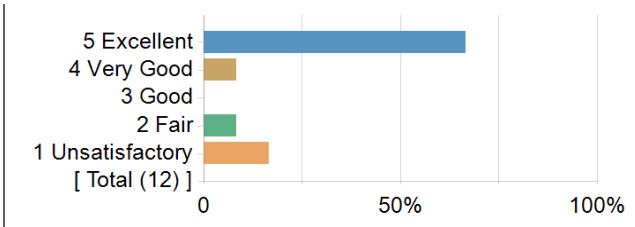
6. Gives useful feedback on assignments



Options	Score	Count	Percentage
Excellent	5	13	87%
Very Good	4	1	7%
Good	3	1	7%
Fair	2	0	0%
Unsatisfactory	1	0	0%

Statistics	Value
Response Ratio	18%
Mean	4.80
Median	5.00
Standard Deviation	0.56

7. Returns assignments in a timely fashion



Options	Score	Count	Percentage
Excellent	5	8	67%
Very Good	4	1	8%
Good	3	0	0%
Fair	2	1	8%
Unsatisfactory	1	2	17%

Statistics	Value
Response Ratio	14%
Mean	4.00
Median	5.00
Standard Deviation	1.65

Section Leader Comments

Please comment on your Section Leader's teaching.

Comments
Yuntian is the AMAZING!!!! He is super super smart and knows the material like the back of his hand. He understands every question we have just by glancing at the code. He is very respectful in his delivery of the answer and cares to make sure that we understand WHY and not just WHAT, which I found very helpful going throughout the course. I am very grateful for him and his presence in the class. Thank you, Yuntian!
Great at explaining concepts and what the root problems are of errors. Very knowledgeable.
Yuntian is incredible! He was always so helpful whenever I or a partner had a question, whether in class, OH, or on Ed. It's clear that he knows this material deeply and cares so much about student learning. Thank you for a great semester, Yuntian!
Yuntian is incredible. He is passionate about NLP and it shines through and helps us to have motivation to keep going. He is amazing!
Yuntian is so kind and helpful. He went above and beyond to try and help us understand everything that was happen and took so much time to look through code and help with dimension errors and other bugs.
Yuntian gave super in depth explanations of really complex concepts, and always offered help when needed both in and outside the classroom.
Was so so so helpful in office hours! A lifesaver!
Yuntian did an excellent job of encouraging conceptual understanding while helping students in class!
YunTian is so helpful, really was the MVP in getting my projects and hard labs debugged
Very kind and helpful TF.

Fall 2020 Individual Report FAS-COMPSCI 187-Introduction to Computational Linguistics and Natural-language Processing 001 Yuntian Deng

Project Title: **2020 Fall Harvard FAS Course Evaluation**

Course Audience: **33**
Responses Received: **31**
Response Ratio: **94%**

Report Comments

Note:
The order that the questions appear on this report is not the same as the way the questions were displayed to students.
The order has been changed to make the report more readable.

Creation Date: **Wednesday, January 27, 2021**

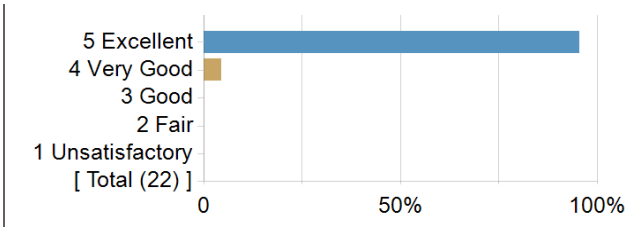
Evaluation of Section Leaders

Section Leader Questions

	Count	Excellent	Very Good	Good	Fair	Unsatisfactory	Instructor Mean	Dept Mean	Division Mean
Evaluate your Section Leader overall.	22	95%	5%	0%	0%	0%	4.95	4.66	4.60
Gives effective lectures or presentations, if applicable	20	85%	15%	0%	0%	0%	4.85	4.58	4.57
Facilitates discussion and encourages participation	20	75%	15%	10%	0%	0%	4.65	4.60	4.56
Is accessible outside of class (including after class, office hours, e-mail, etc.)	22	95%	0%	5%	0%	0%	4.91	4.67	4.64
Generates enthusiasm for the subject matter	21	81%	14%	5%	0%	0%	4.76	4.57	4.53
Gives useful feedback on assignments	21	57%	5%	14%	19%	5%	3.90	4.51	4.49
Returns assignments in a timely fashion	20	35%	5%	10%	10%	40%	2.85	4.50	4.52

Section Leader

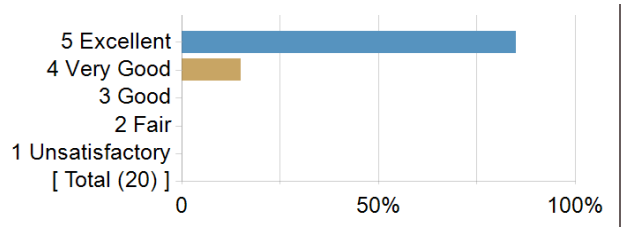
1. Evaluate your Section Leader overall.



Options	Score	Count	Percentage
Excellent	5	21	95%
Very Good	4	1	5%
Good	3	0	0%
Fair	2	0	0%
Unsatisfactory	1	0	0%

Statistics	Value
Response Ratio	67%
Mean	4.95
Median	5.00
Standard Deviation	0.21

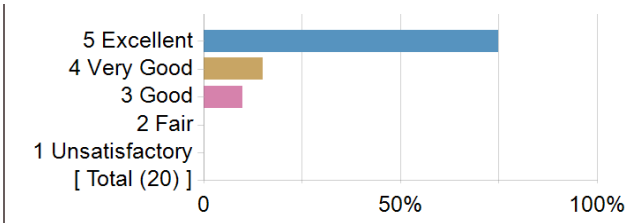
2. Gives effective lectures or presentations, if applicable



Options	Score	Count	Percentage
Excellent	5	17	85%
Very Good	4	3	15%
Good	3	0	0%
Fair	2	0	0%
Unsatisfactory	1	0	0%

Statistics	Value
Response Ratio	61%
Mean	4.85
Median	5.00
Standard Deviation	0.37

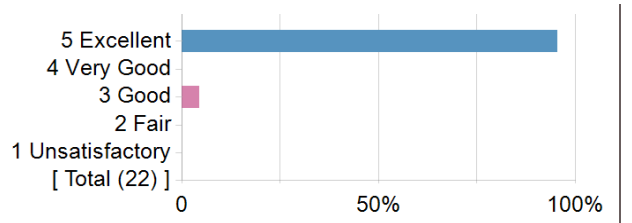
3. Facilitates discussion and encourages participation



Options	Score	Count	Percentage
Excellent	5	15	75%
Very Good	4	3	15%
Good	3	2	10%
Fair	2	0	0%
Unsatisfactory	1	0	0%

Statistics	Value
Response Ratio	61%
Mean	4.65
Median	5.00
Standard Deviation	0.67

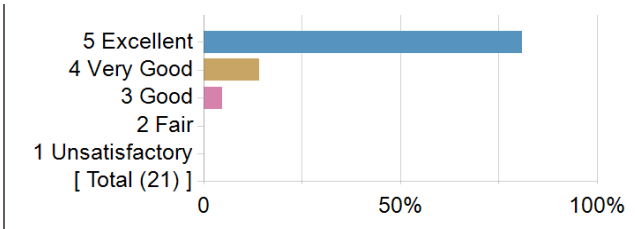
4. Is accessible outside of class (including after class, office hours, e-mail, etc.)



Options	Score	Count	Percentage
Excellent	5	21	95%
Very Good	4	0	0%
Good	3	1	5%
Fair	2	0	0%
Unsatisfactory	1	0	0%

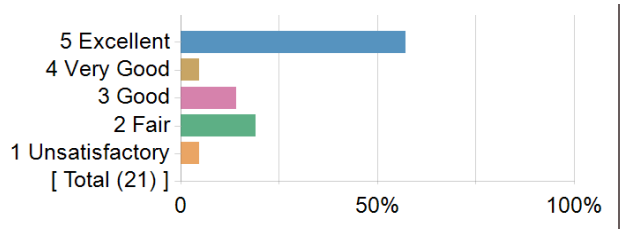
Statistics	Value
Response Ratio	67%
Mean	4.91
Median	5.00
Standard Deviation	0.43

5. Generates enthusiasm for the subject matter



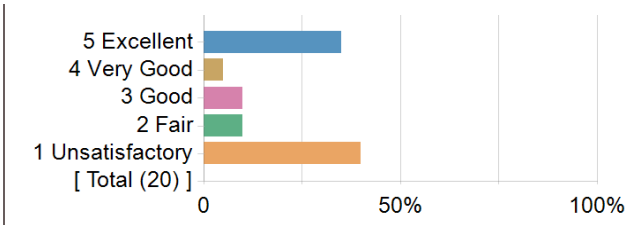
Options	Score	Count	Percentage
Excellent	5	17	81%
Very Good	4	3	14%
Good	3	1	5%
Fair	2	0	0%
Unsatisfactory	1	0	0%
Statistics			Value
Response Ratio			64%
Mean			4.76
Median			5.00
Standard Deviation			0.54

6. Gives useful feedback on assignments



Options	Score	Count	Percentage
Excellent	5	12	57%
Very Good	4	1	5%
Good	3	3	14%
Fair	2	4	19%
Unsatisfactory	1	1	5%
Statistics			Value
Response Ratio			64%
Mean			3.90
Median			5.00
Standard Deviation			1.41

7. Returns assignments in a timely fashion



Options	Score	Count	Percentage
Excellent	5	7	35%
Very Good	4	1	5%
Good	3	2	10%
Fair	2	2	10%
Unsatisfactory	1	8	40%
Statistics			Value
Response Ratio			61%
Mean			2.85
Median			2.50
Standard Deviation			1.81

Section Leader Comments

Please comment on your Section Leader's teaching.

Comments
Yuntian is extremely knowledgeable and helpful. I attended his sections and office hours multiple times and never left without having my doubts cleared. He has been indispensable in this course.
GIVE YUNTIAN A RAISE (or promotion, or whatever you can give to a grad student)!!!!!! He is easily the most knowledgeable, accessible, helpful, and kind teaching fellow I've had thus far. He did an amazing job designing the labs and problem sets to be manageable, and he was also the MVP of Piazza and things that seemed impossible to debug. His office hours were life–saving.
Yuntiann was an extremely knowledgeable resource throughout the course, and helped a lot of people understand the material a lot better.
Yuntian was extremely helpful throughout the semester, especially when I was confused about course content. He is very competent, explains concepts very clearly, and is very passionate about the material.
Sections were super useful and informative! I really needed to be getting feedback on my assignments earlier, so I understood where I wasn't meeting the expectations of the course and could correct myself.
Exceptionally knowledgable about the field and it would be quite difficult to find a question that couldn't be answered by Yuntian. A true asset to the class, and I have great respect for his knowledge
Yuntian!! You were a fantastice TF! Thanks for saving me all those times in OH and Piazza. You are obviously extremely dedicated so I appreciate that!
Yuntian is super helpful in giving us guidance and feedback on in–course lab assignments and course projects! His quick and timely response on Piazza is essential and I can also find them useful in tackling problems.
Yuntian is the best CS TF I've had at Harvard. He's incredibly enthusiastic about the material and dedicated to helping students, and that shows in his excitement at office hours and his willingness to answer questions at all hours on Piazza. This course would not have succeeded without him.
Yuntian is amazing. Helped a lot with understanding labs and the code!
Yuntian was very helpful during OH, and I appreciate how much time he put in to help create the labs and project segments!
Yuntian is very clear and knows what he is talking about. I could regularly count on him for in depth explanations about concepts I was confused about.