Virginia Tech
Spring 2022 VT Student Perceptions of Teaching (SPOT)

Course:	ECE_5424_13770_202201: Advanced Machine Learning-ECE_5424_13770_202201
Instructor:	Ming Jin *
Response Rate:	24/28 (85.71 %)

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1 - Please indicate the extent to which you agree or disagree with each of the following statements:

1A - The instructor was well prepared.

Ming Jin

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly disagree	(1)	1	4.17%		
Disagree	(2)	1	4.17%		
Somewhat disagree	(3)	0	0.00%		
Somewhat agree	(4)	1	4.17%		
Agree	(5)	4	16.67%		
Strongly agree	(6)	17	70.83%		

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	5.38	1.31	6.00	19839	5.24	1.08	6.00	2710	5.07	1.20	5.00

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1 - Please indicate the extent to which you agree or disagree with each of the following statements:

1B - The instructor presented the subject matter clearly.

Ming Jin

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly disagree	(1)	1	4.17%		
Disagree	(2)	1	4.17%		
Somewhat disagree	(3)	0	0.00%		
Somewhat agree	(4)	2	8.33%		
Agree	(5)	4	16.67%		
Strongly agree	(6)	16	66.67%		

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	5.29	1.33	6.00	19709	5.01	1.25	5.00	2689	4.74	1.42	5.00

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1 - Please indicate the extent to which you agree or disagree with each of the following statements:

1C - The instructor provided feedback intended to improve my course performance.

Ming Jin

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly disagree	(1)	2	8.33%		
Disagree	(2)	0	0.00%		
Somewhat disagree	(3)	0	0.00%		
Somewhat agree	(4)	2	8.33%		
Agree	(5)	5	20.83%		
Strongly agree	(6)	15	62.50%		

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	5.21	1.44	6.00	19676	4.97	1.28	5.00	2687	4.71	1.45	5.00

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1 - Please indicate the extent to which you agree or disagree with each of the following statements:

1D - The instructor fostered an atmosphere of mutual respect.

Ming Jin

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly disagree	(1)	1	4.17%		
Disagree	(2)	0	0.00%		
Somewhat disagree	(3)	0	0.00%		
Somewhat agree	(4)	0	0.00%		
Agree	(5)	3	12.50%		
Strongly agree	(6)	20	83.33%		

Means: Question 5.67, College 5.35, Department 5.22

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	5.67	1.05	6.00	19693	5.35	1.03	6.00	2693	5.22	1.12	6.00

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1 - Please indicate the extent to which you agree or disagree with each of the following statements:

1E - Overall, the instructor's teaching was effective.

Ming Jin

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly disagree	(1)	1	4.17%		
Disagree	(2)	1	4.17%		
Somewhat disagree	(3)	0	0.00%		
Somewhat agree	(4)	1	4.17%		
Agree	(5)	5	20.83%		
Strongly agree	(6)	16	66.67%		

Means: Question 5.33, College 5.00, Department 4.76

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	5.33	1.31	6.00	19556	5.00	1.28	5.00	2670	4.76	1.44	5.00

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2 - 2A - What did the instructor do that most helped in your learning?

Ming Jin	
Response Rate	17/28 (60.71%)

• The concept of students scribing every lecture, not only helps the student who scribes the lecture but the other students too who want to revisit some topics covered during class. There were numerous times when I used them and the lecture notes to get a better understanding.

• Demos in between lectures with heavy statistics; practical applications; discuss with students to understand what exactly do we expect from the course.

• Making homework assignments as a full tutorial

• Professor went through many theories which were helpful for deeper understanding of some techniques.

• He gave motivations behind every topics and how a new topics is related to previous topics.

• Introduced useful materials to me to solve my question.

• Going through examples (especially walking through the quiz questions after a quiz) was the most helpful.

• I really like when an instructor writes instead of using slides. Dr. Ming Jim did a really great job in teaching. I think his teaching is few of the best in VT so far. I really appreciate his mentality - which was to learn as much possible and not worry about grades.

• When Prof. Ming Jin gave real-life applications of Machine Learning, It really helped me at understanding the concepts a lot better.

• The practice of scribing lectures was a great experience.

• By explain the concept with detailed information

• Dr. Jin designed the course in a very interesting and adaptive manner. He took constant feedback to estimate our understanding from the content of the course materials and made necessary modifications to the course. He designed assignments that were quite difficult, but overall helped in comprehending the concepts through a steep learning curve. Often, the assignments did not have direct questions. As a student, I had to read and reread the questions just to understand what the question was asking. He also included scribing assignments to teach us how to present technical document in a paper format. Overall, a very good learning experience!

• His notes and prepared manner of the lectures made it really easy to follow and read up on the work before the class started to get an idea of what we were going to learn that day.

• Adjusted the pattern of the course as per the response.

• The programming assignments were very helpful and we should have had more of those.

• Explained the origins of algorithms and gradually moved towards state-of-the-art. Allowed for greater understanding of material

• The most impressive part of this lecture was that the instructor provided fundamental understanding with mathematical background. I really enjoyed this, because I can understand more fundamental things behind many machine learning algorithms. Furthermore, he was providing very many fundamental things, which are crucial for machine learning. Finally, with the assignments, we can get empirical understanding as well.

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3 - Please indicate the extent to which you agree or disagree with each of the following statements:

3A - I have a deeper understanding of the subject matter as a result of this course.

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly disagree	(1)	0	0.00%		
Disagree	(2)	1	4.17%		
Somewhat disagree	(3)	0	0.00%		
Somewhat agree	(4)	1	4.17%		
Agree	(5)	7	29.17%		
Strongly agree	(6)	15	62.50%		

Response Rate	**Mean**	**STD**	**Median**	**College**	**Mean**	**STD**	**Median**
24/28 (85.71%)	5.46	0.93	6.00	18115	5.11	1.12	5.00
				Department	**Mean**	**STD**	**Median**
				2640	4.95	1.23	5.00

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3 - Please indicate the extent to which you agree or disagree with each of the following statements:

3B - My interest in the subject matter was stimulated by this course.

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly disagree	(1)	1	4.17%		
Disagree	(2)	1	4.17%		
Somewhat disagree	(3)	0	0.00%		
Somewhat agree	(4)	0	0.00%		
Agree	(5)	7	29.17%		
Strongly agree	(6)	15	62.50%		

Response Rate	**Mean**	**STD**	**Median**	**College**	**Mean**	**STD**	**Median**
24/28 (85.71%)	5.33	1.27	6.00	18025	4.85	1.35	5.00
				Department	**Mean**	**STD**	**Median**
				2623	4.67	1.47	5.00

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4 - 4A - What could you have done to be a better learner?
Response Rate   14/28 (50%)

• I should've been more open to asking questions and getting into a deeper conversation with the instructor for the topics that excited me the most.

• Taken courses related to stats to understand the algorithms better before taking the AML course.

• I could have studied the textbook more

• Covering even more theories.

• Being more involved in the discussion with my collogues.

• Read some optional materials.

• I could have been more attentive during class and spent more time on each homework assignment.

• I could have probably asked more questions because Machine Learning is a relatively difficult topic to grasp and prof. Ming Jin was good a terrific job at answering everyone's questions.

• Spend more time on watching the lecture

• I had only limited experience in this topic from an application perspective. My learning involved understanding key mathematical concepts that form the basis of this topic. Most of the supplementary material available online discusses the application and do not go into considerable mathematical depth. I could have gone through some of the underlying mathematical concepts from dedicated online mathematical content beforehand. This was somewhat difficult as I did not know much about the mathematical topics that would form the basis of machine learning. On the other hand, I was quite comfortable with my Python programming skills for implementing the algorithms in the programming assignments.

• Went to more office hours and started some of my assignments earlier

• Read more research papers

• Read more of the textbook

• Review the course content , Do assignments and the course project.

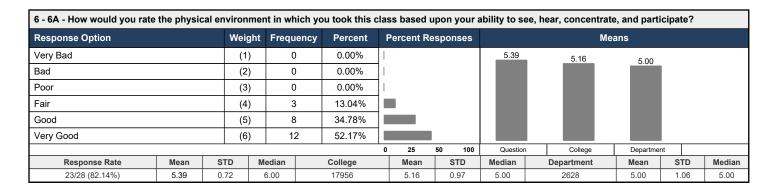| **5 - 5A - Please add any additional comments regarding the course and/or instructor here:** |
|---|
| **Ming Jin** |
| **Response Rate**   14/28 (50%) |

• Really good teaching team. The TA Sandesh was really helpful.

• Well organized course structure. Only negative is no equal opportunities for students to earn bonus points - only first come first serve basis.

• My biggest issue with the course was that it seemed mismanaged. A lot of rules regrading the number of assignments and grading policies changed throughout the semester. There was also a tendency to only have a clarity regarding a task very close to when the task was due. In scenarios like these even if the task were doable in the time giving but the uncertainty till last minute was anxiety inducing

• The TAs were not so prepared for assisting students. In result, I could not depend on them.

• It would have been helpful to have assignment due dates given more in advance. In general, homework assignments had enough time. But project milestones and quizzes had a lot of confusion surrounding when things would be due. It would have been better if all assignment due dates could be posted to a common platform first (assumption is this is Canvas), so that there is not confusion when dates can't be found or we must go to a forum like Piazza to find them.

• The major comment is regarding the course TA's. I think the instructor should have been more careful in choosing the TAs. I'm not satisfied how the TAs handled every thing- sometimes it was very frustrating (very scare help in assignments from TAs, response to questions very evasive sometimes),

• Thanks a lot prof. Ming Jin for taking AML for us!

• All good

• Dr. Jin was very helpful and supportive throughout the course. He would also discuss some history behind some of the key concepts. These anecdotes made the flow of the course more interesting. It would have been great if the TAs had more office hours as this was a larger class with many students. Also, the TAs could have been more helpful.

• Great professor, needs to work on responding to emails faster.

• The instructor was very clear and precise with his explanations and all the lectures were very well organized. I also enjoyed his presenting and annotating method.

• The course schedule and objectives were very unclear. Assignments and quizzes kept being taken away due to lack of preparation on the instructor and TA's end, so the grading kept changing from what was "advertised" at the beginning of the course. We were supposed to have 6-7 assignments but only had 4, we were supposed to have 3 quizzes but only had 2. As such, the grading policy was shifted a few times over the course and students had no way to make up chunks of grade for those assignments/quizzes that were missing. For example, there were supposed to be 3 quizzes at 10% grade each. After the 2nd quiz, it was announced that there wouldn't be a 3rd quiz and now the two quizzes are 15% of the grade each. There was no way to prepare for that change or make up if a student didn't do as well as they would have liked. This is unacceptable. This was the most disorganized course I've ever taken. I hope future improvements get made.

• In general, many assignments were really helpful, and four assignments looks reasonable. However, if we can choose different weights between assignments and a project, it would be better for some students who want to publish their work within the course timeline.

• Assigned readings before class would be beneficial.

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Response Rate: 24/28 (85.71 %)

6 - 6A - How would you rate the physical environment in which you took this class based upon your ability to see, hear, concentrate, and participate?

Response Option	Weight	Frequency	Percent
Very Bad	(1)	0	0.00%
Bad	(2)	0	0.00%
Poor	(3)	0	0.00%
Fair	(4)	3	13.04%
Good	(5)	8	34.78%
Very Good	(6)	12	52.17%

Means: Question 5.39, College 5.16, Department 5.00

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
23/28 (82.14%)	5.39	0.72	6.00	17956	5.16	0.97	5.00	2628	5.00	1.06	5.00

7 - 7A - Please add any comments about the physical environment here:

Response Rate	6/28 (21.43%)

- All good
- I enjoyed online zoom classes, I could freely take notes and rewatch videos whenever I needed a revision of my own notes.
- Even though it is different from one student to another, I find myself more concentrated in the virtual learning instead of online .
- it's virtual
- The classes were held online. Dr. Jin managed the course delivery very well through the online medium.
- Virtual course. Professor attentive to chat and answered questions.

8 - Please indicate the extent to which you agree or disagree with each of the following statements:

I improved my ability to problem solve.

Response Option	Weight	Frequency	Percent
Strongly disagree	(1)	1	4.17%
Disagree	(2)	0	0.00%
Somewhat disagree	(3)	0	0.00%
Somewhat agree	(4)	2	8.33%
Agree	(5)	9	37.50%
Strongly agree	(6)	12	50.00%

Means: Question 5.25, College 5.06, Department 4.95

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	5.25	1.11	5.50	18068	5.06	1.08	5.00	2649	4.95	1.13	5.00

8 - Please indicate the extent to which you agree or disagree with each of the following statements:

The textbook or course readings made a valuable contribution to my learning.

Response Option	Weight	Frequency	Percent
Strongly disagree	(1)	1	4.55%
Disagree	(2)	1	4.55%
Somewhat disagree	(3)	1	4.55%
Somewhat agree	(4)	2	9.09%
Agree	(5)	8	36.36%
Strongly agree	(6)	9	40.91%

Means: Question 4.91, College 4.56, Department 4.47

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
22/28 (78.57%)	4.91	1.38	5.00	17968	4.56	1.44	5.00	2629	4.47	1.46	5.00

Course: ECE_5424_13770_202201: Advanced Machine Learning-ECE_5424_13770_202201
Instructor: Ming Jin *
Response Rate: 24/28 (85.71 %)

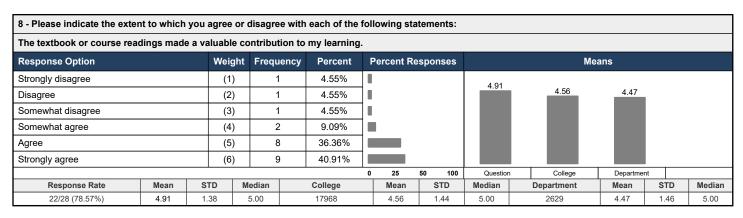### 8 - Please indicate the extent to which you agree or disagree with each of the following statements:

The objectives of the course were clearly explained.

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly disagree	(1)	1	4.17%		5.25
Disagree	(2)	0	0.00%		5.07
Somewhat disagree	(3)	0	0.00%		4.85
Somewhat agree	(4)	2	8.33%		
Agree	(5)	9	37.50%		
Strongly agree	(6)	12	50.00%		

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	5.25	1.11	5.50	18003	5.07	1.15	5.00	2638	4.85	1.28	5.00

8 - Please indicate the extent to which you agree or disagree with each of the following statements:

The out-of-class assignments were educationally valuable.

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly disagree	(1)	0	0.00%		5.50
Disagree	(2)	0	0.00%		5.01
Somewhat disagree	(3)	0	0.00%		4.94
Somewhat agree	(4)	1	4.17%		
Agree	(5)	10	41.67%		
Strongly agree	(6)	13	54.17%		

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	5.50	0.59	6.00	17908	5.01	1.20	5.00	2625	4.94	1.24	5.00

9 - The instructor related theories and concepts to practical issues.

Ming Jin

Response Option	Weight	Frequency	Percent	Percent Responses	Means
Strongly disagree	(1)	0	0.00%		5.70
Disagree	(2)	0	0.00%		5.26
Somewhat disagree	(3)	0	0.00%		5.09
Somewhat agree	(4)	1	4.35%		
Agree	(5)	5	21.74%		
Strongly agree	(6)	17	73.91%		

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
23/28 (82.14%)	5.70	0.56	6.00	19417	5.26	1.02	6.00	2651	5.09	1.15	5.00

10 - Compared to other courses at this level, the difficulty of this course is:

Response Option	Weight	Frequency	Percent	Percent Responses	Means
much less than average	(1)	0	0.00%		4.26
slightly less than average	(2)	0	0.00%		4.05
average	(3)	5	21.74%		4.05
slightly more than average	(4)	8	34.78%		
much more than average	(5)	9	39.13%		
I have not taken other courses at this level	(6)	1	4.35%		

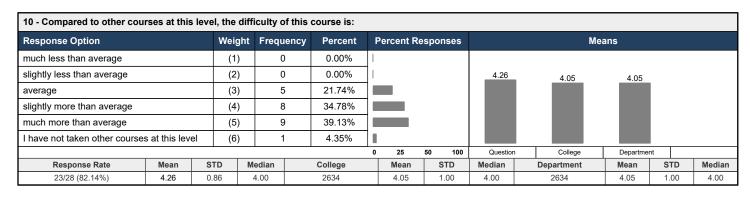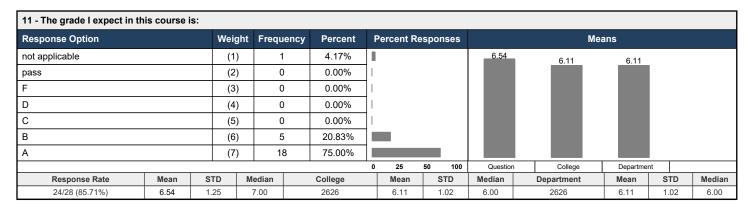| Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
23/28 (82.14%)	4.26	0.86	4.00	2634	4.05	1.00	4.00	2634	4.05	1.00	4.00

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11 - The grade I expect in this course is:

Response Option	Weight	Frequency	Percent
not applicable	(1)	1	4.17%
pass	(2)	0	0.00%
F	(3)	0	0.00%
D	(4)	0	0.00%
C	(5)	0	0.00%
B	(6)	5	20.83%
A	(7)	18	75.00%

Means: Question 6.54, College 6.11, Department 6.11

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	6.54	1.25	7.00	2626	6.11	1.02	6.00	2626	6.11	1.02	6.00

12 - Approximately how many hours per week outside of class do you spend on homework, reading, and projects for this course?

Response Option	Weight	Frequency	Percent
0-2	(1)	0	0.00%
3-5	(2)	4	16.67%
6-9	(3)	11	45.83%
10-14	(4)	5	20.83%
15 or more	(5)	4	16.67%

Means: Question 3.38, College 3.00, Department 3.00

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	3.38	0.97	3.00	2637	3.00	0.99	3.00	2637	3.00	0.99	3.00

13 - At the end of this course, how do I rate my ability to:

Analyze and contrast broad classes of machine learning algorithms (supervised vs. unsupervised vs. semi-supervised)

Response Option	Weight	Frequency	Percent
Poor	(1)	1	4.17%
Fair	(2)	0	0.00%
Good	(3)	6	25.00%
Excellent	(4)	17	70.83%
N/A	(0)	0	0.00%

Means: Question 3.63, College 3.63, Department 3.63

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	3.63	0.71	4.00	24	3.63	0.71	4.00	24	3.63	0.71	4.00

13 - At the end of this course, how do I rate my ability to:

Describe and apply fundamental concepts of learning from data (maximum likelihood estimation, maximum a posteriori, overfitting vs underfitting, regularization, cross-validation)

Response Option	Weight	Frequency	Percent
Poor	(1)	0	0.00%
Fair	(2)	2	8.33%
Good	(3)	7	29.17%
Excellent	(4)	15	62.50%
N/A	(0)	0	0.00%

Means: Question 3.54, College 3.54, Department 3.54

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	3.54	0.66	4.00	24	3.54	0.66	4.00	24	3.54	0.66	4.00

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13 - At the end of this course, how do I rate my ability to:

Illustrate and program supervised learning algorithms for regression (e.g. least squares via pseudo-inverse)

Response Option	Weight	Frequency	Percent
Poor	(1)	1	4.35%
Fair	(2)	1	4.35%
Good	(3)	6	26.09%
Excellent	(4)	15	65.22%
N/A	(0)	0	0.00%

Means: Question 3.52, College 3.52, Department 3.52

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
23/28 (82.14%)	3.52	0.79	4.00	23	3.52	0.79	4.00	23	3.52	0.79	4.00

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13 - At the end of this course, how do I rate my ability to:

Illustrate and program supervised learning algorithms for classification (e.g. logistic regression via gradient descent, support vector machines via Quadratic Programming)

Response Option	Weight	Frequency	Percent
Poor	(1)	1	4.17%
Fair	(2)	0	0.00%
Good	(3)	8	33.33%
Excellent	(4)	15	62.50%
N/A	(0)	0	0.00%

Means: Question 3.54, College 3.54, Department 3.54

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	3.54	0.72	4.00	24	3.54	0.72	4.00	24	3.54	0.72	4.00

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13 - At the end of this course, how do I rate my ability to:

Design and program unsupervised learning algorithms for clustering (e.g. kmeans)

Response Option	Weight	Frequency	Percent
Poor	(1)	0	0.00%
Fair	(2)	1	4.17%
Good	(3)	8	33.33%
Excellent	(4)	15	62.50%
N/A	(0)	0	0.00%

Means: Question 3.58, College 3.58, Department 3.58

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	3.58	0.58	4.00	24	3.58	0.58	4.00	24	3.58	0.58	4.00

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13 - At the end of this course, how do I rate my ability to:

Design and implement a technical project, and apply developed techniques to real-world datasets (images, text, robotics, etc.)

Response Option	Weight	Frequency	Percent
Poor	(1)	0	0.00%
Fair	(2)	1	4.17%
Good	(3)	7	29.17%
Excellent	(4)	16	66.67%
N/A	(0)	0	0.00%

Means: Question 3.63, College 3.63, Department 3.63

Response Rate	Mean	STD	Median	College	Mean	STD	Median	Department	Mean	STD	Median
24/28 (85.71%)	3.63	0.58	4.00	24	3.63	0.58	4.00	24	3.63	0.58	4.00

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Response Rate:	24/28 (85.71 %)

13 - At the end of this course, how do I rate my ability to:								
Apply and adapt learned machine learning techniques to their own research/thesis domain								
Response Option	**Weight**	**Frequency**	**Percent**	**Percent Responses**	**Means**			
Poor	(1)	0	0.00%		3.67 Question	3.67 College	3.67 Department	
Fair	(2)	0	0.00%					
Good	(3)	8	33.33%					
Excellent	(4)	16	66.67%					
N/A	(0)	0	0.00%					

| | | | | 0 25 50 100 | Question | | Department | | | |

Response Rate	**Mean**	**STD**	**Median**	**College**	**Mean**	**STD**	**Median**	**Department**	**Mean**	**STD**	**Median**
24/28 (85.71%)	3.67	0.48	4.00	24	3.67	0.48	4.00	24	3.67	0.48	4.00