MODULE REPORT

Module	CS2109S - INTRODUCTION TO AI AND MACHINE LEARNING
Academic Year/Sem	2022/2023 - Sem 1
Department	COMPUTER SCIENCE
Faculty	SCHOOL OF COMPUTING

Note: Class Size = Invited; Response Size = Responded; Response Rate = Response Ratio

Raters	Student
Responded	172
Invited	202
Response Ratio	85%

1. Overall opinion of the module

Distribution of Responses

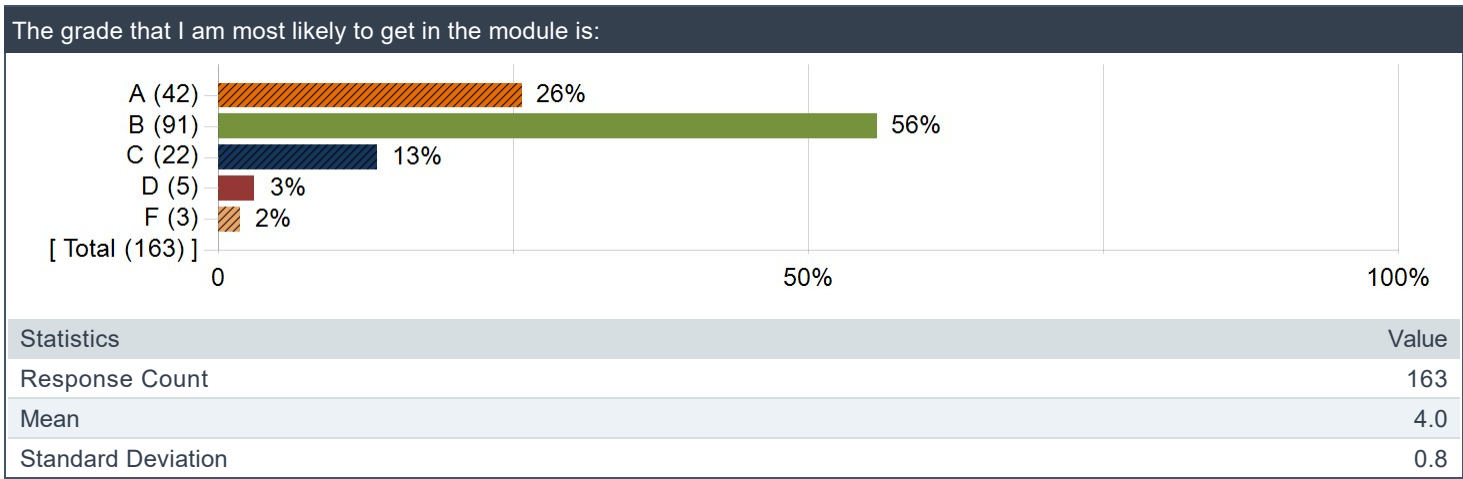| Statistics	Value
Response Count	172
Mean	3.5
Median	4.0
Mode	4
Standard Deviation	1.0
Positive Feedback	59%

Rating Scores

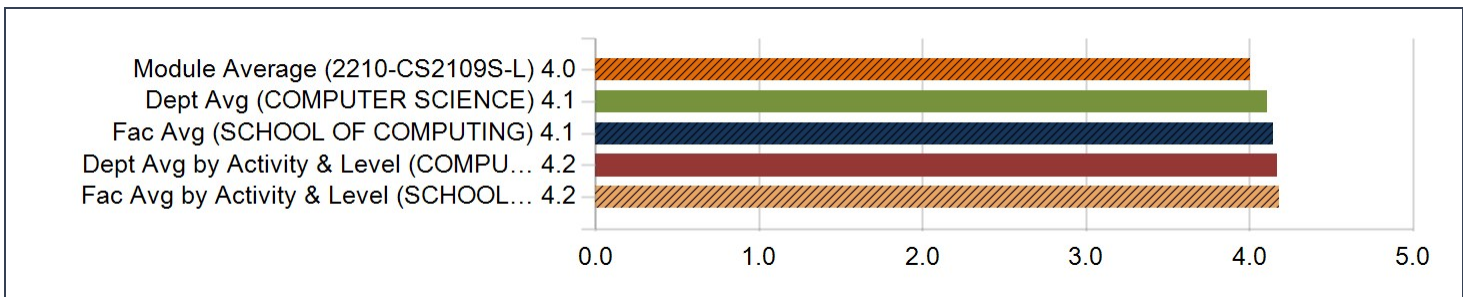| Question	Module Average (2210-CS2109S-L)		Dept Avg (COMPUTER SCIENCE)		Fac Avg (SCHOOL OF COMPUTING)		Dept Avg by Activity & Level (COMPUTER SCIENCE-LECTURE (Level 2000))		Fac Avg by Activity & Level (SCHOOL OF COMPUTING-LECTURE (Level 2000))	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
What is your overall opinion of the module?	3.5	1.0	3.9	0.9	3.9	0.9	3.9	0.9	3.9	0.9
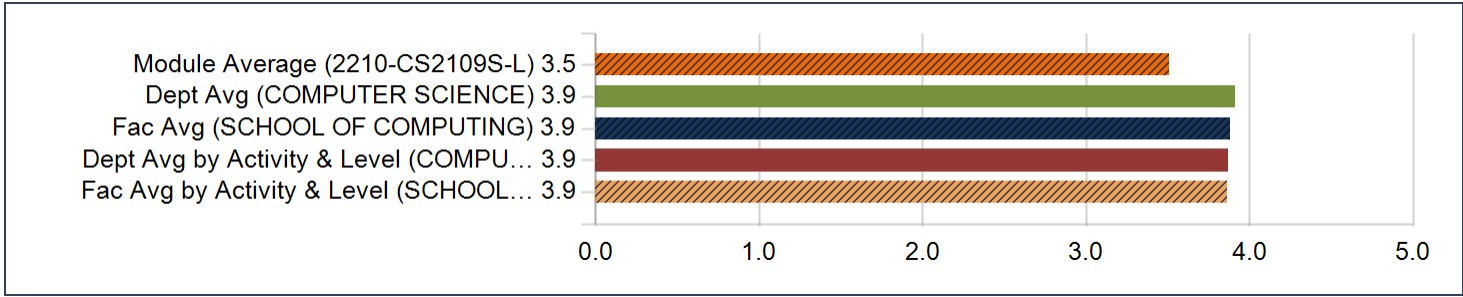
2. Expected Grade

Distribution of Responses

The grade that I am most likely to get in the module is:

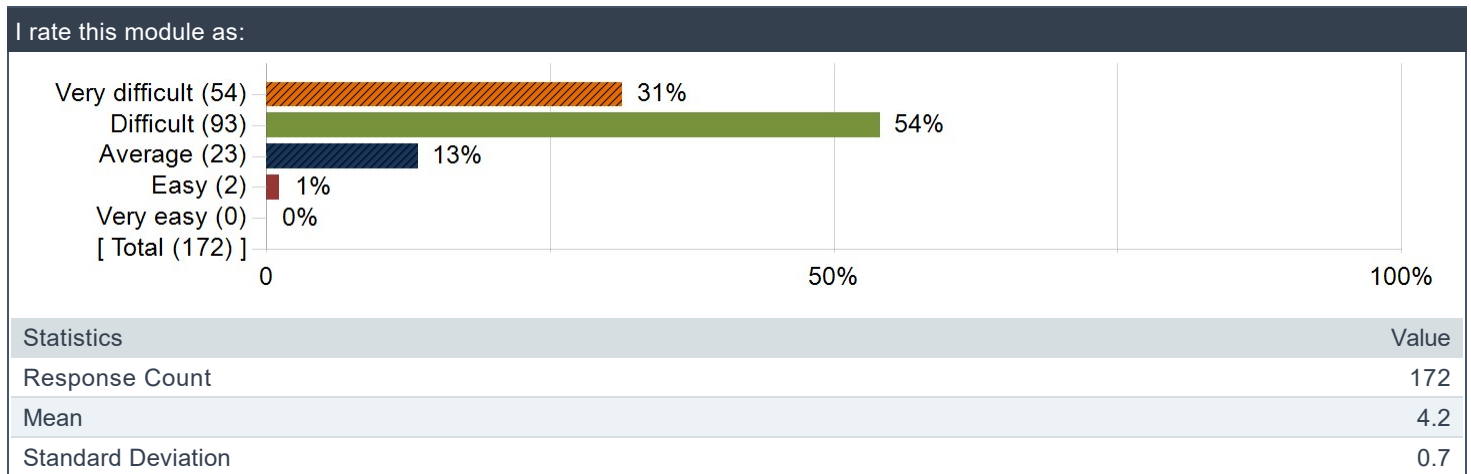| Statistics	Value
Response Count	163
Mean	4.0
Standard Deviation	0.8

Rating Scores

| Question	Module Average (2210-CS2109S-L)		Dept Avg (COMPUTER SCIENCE)		Fac Avg (SCHOOL OF COMPUTING)		Dept Avg by Activity & Level (COMPUTER SCIENCE-LECTURE (Level 2000))		Fac Avg by Activity & Level (SCHOOL OF COMPUTING-LECTURE (Level 2000))	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
The grade that I am most likely to get in the module is:	4.0	0.8	4.1	0.8	4.1	0.8	4.2	0.7	4.2	0.7

3. Difficulty Level of the module

Distribution of Responses

I rate this module as:

Statistics	Value
Response Count	172
Mean	4.2
Standard Deviation	0.7

Rating Scores

Question	Module Average (2210-CS2109S-L)		Dept Avg (COMPUTER SCIENCE)		Fac Avg (SCHOOL OF COMPUTING)		Dept Avg by Activity & Level (COMPUTER SCIENCE-LECTURE (Level 2000))		Fac Avg by Activity & Level (SCHOOL OF COMPUTING-LECTURE (Level 2000))	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
I rate this module as:	4.2	0.7	3.9	0.8	3.8	0.8	3.9	0.8	3.9	0.8
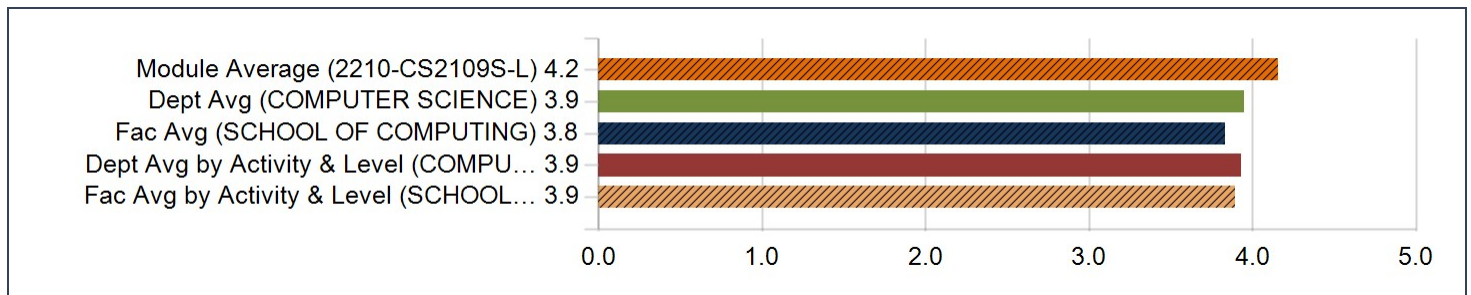
WHAT I LIKE / DISLIKE ABOUT THE MODULE

What I liked about the module:

Comments
Content is interesting and the problem–solving aspects are fun and rewarding (through the problem sets).
The focus on key ideas
the contents
The topics covered are interesting. I love that there is emphasis on practical aspects and less on heavy math stuff. The mini project was also really fun.
None
interesting and greater understanding on AI

Comments
A LOT of practice to learn about both the high–level concepts about AI and how to physically implement them
Interesting and useful subject matter
Very interesting topics
Problem sets
we have a lot hands on practices in the problem sets.
Interesting topics, and I like the focus on practical topics.
Useful content
none
Learning about AI
I get to try making Neural networks.
Interesting topics
It is very interesting and relatable.
The problem set and coursemology gamifications.
–
The content was interesting
The problem sets were really fun and meaningful.
I like that given only 13 weeks we are able cover a balance of breadth and depth of these topic. Such as classical AI and machine learning in the later half.
It is interesting and has a good balance of theory and practical work.
Interesting subject, useful practical practice.
Good step towards AI and ML
The contents of AI and ML are really interesting and applicable in real–life. Glad to learn some problem–solving strategies from this course, the problem sets are very interesting.
Nothing
It has taught me new and refreshing concepts about what AI and machine learning are about.
Good hands–on practice.
Interesting concepts like gradient descent and various search algorithms
Not bad. AI and ML seems quite fun now.
The various lecture trainings and problem sets on Coursemology enhanced my learning greatly.
Very cool concepts.
n.a.
I quite liked the content which helped me to gain a deeper insight into machine learning, which is rather interesting.
Was able to grasp the general idea of how AI and ML works
Challenging
The content
Interesting concepts, homework tough and heavy workload but interesting and fulfilling to complete
The machine learning aspects of the module were incredibly interesting to me as well as the ML related coding practices.
Learning the python packages used in the module is quite applicable to our major
A fair bit of practical experience. Not as crazy as some of the other modules I've taken
nil
Problem sets are well–designed, and I had a lot of fun with the mini–project which forced me to read up more about various AI techniques.
AI & ML
Crucial classical AI concepts is taught, students often know about AI but not classical AI
The mini project that encourages self exploration and continuous improvement
I loved learning about the search algorithms to find the solutions, the gamified CA and the short clips played in between lessons to help us unwind for a bit.

Comments
Generally interesting and fun.
linear regression, problem formulation, deciding on which search algorithm is best for which problem
Module content is very relevant and useful
Machine learning.
It talks about lots of algorithms/concepts that makes machine learning machine learning
Machine learning
Introduced me to interesting concepts of AI and ML
AI
I think it really covered the essential basics for introduction to both AI and machine learning. The module was well structured and I really like the concept of having coursemology problem sets to solidify learning.

What I did not like about the module:

Comments
Teaching is horrendous. A lot of self–learning is required to make up for ineffective lectures. Content and workload is too high for a 4MC introductory mod.
Alot of math
Mainly the workload and the uncertainty with this module. Being in the second iteration, there's still a lot of kinks in the module that is not ironed out.
The lack of materials, especially when it often feels like there is a gap between the lectures and the assignments. Also, it feels weird to have a final practical instead of having a final exam and a practical examination with lower weightage instead.
lectures are a bit difficult to follow
We cannot see where we got wrong in the private test cases for the problem sets.
Would be lovely to have more detailed notes or links to resources for us to read up on stuff we dont quite understand.
Too much self learning expected.
If you want to teach search, then just open a course called "Search Algorithm". But this module is AI, why should I fail this module just because I did badly on that search problem?
None
nil
Honestly it was crazy
Contents not explained thoroughly and is really confusing for beginners, especially after the first few weeks.
Tight deadlines
Tutorials and especially problem sets are very different from lectures. Lectures often only serve as an introduction to the topic and do not prepare us in answering the tutorials and problem sets. Lecture slides often also lack specific details that may have helped in having a more concrete understanding of the topics, I often had to google for the answers needed. Problem sets also require us to learn extra libraries or languages such as python and NumPy on top of solving the problems. This leads to extra stress as not only do we need to apply the things we have learned in lectures and tutorials, but we also have to learn and google how to use the libraries required, and it is very often that I find myself knowing how to solve the problem, but lacking the means to do it as I do not know what functions/methods I can use.
Very hard
In the lecture, a lot of the topics were poorly taught in lecture; not talking about "unimportant topics", but stuff that was actually tested like Alpha–Beta pruning, backpropagation. In the lecture, the math of backpropagation was glossed over by simply saying "if u stare long enough at it, u'll get it", and the math was "not so important". But when it came to the backpropagation tutorial, everyone was confused on how to do the questions. Albeit, yes, a lot of the learning depends on the tutorials, but it should NOT be the case that I have to Google half the topics being tested, and rely on YouTube videos to actually teach me properly.
None
None
Prof was very incoherent in explanations. Presenting things very simply, only going through basic ideas then expecting us to get a higher–level understanding on our own and then blaming students for not understanding. The course content is interesting but is soured by the fact the prof does not properly explain and give us relevant explanations before giving us difficult tests and calling

Comments
them easy. He does not seem to understand that as students who are learning, it is tough to gain any motivation for a topic if all you do is throw incoherent explanations, blaming students for not understanding, then giving difficult tests only demotivates students for the topic instead of encouraging a deeper interest in the topic. He should be in the corporate world, not a professor
The midterms were really tough for me and I found it overwhelming as all questions required in depth thinking and I could not manage to that in the allocated time.
It is very math intensive especially linear algebra and calculus.
Explanations are often a bit too handwavy, I understand that a lot of content needs to be delivered in a short amount of time, but perhaps can give more concrete explanations?
Module still very in–the–works and uncertain of itself
There are many concepts taught quite briefly, so a lot of time have to be additionally spent reading up online.
Confusing concepts
Workload is too high, compared to CS2040S. Problem sets can be reduced in terms of workload, and can consider making the contest a pair work instead.
Nothing. I liked this module.
Most of the content does not seem very intro–friendly to those who want to get a taste of what AI is about, despite being an Introductory Module. There are a lot of things to digest even for just one topic (Eg. Regression, SVM), so it's quite difficult to catch up when some topics require time to understand first.
Ideas introduced during the lectures were rather vague.
It has a very steep learning curve despite being an introductory module.
the lecturer
Nil
The problem sets are scheduled unevenly, the last 3 ps are a little bit rush. The lecture contents were sometimes too simplify, maybe can provide some further / detail explanation in slides for our own reading. I knew that maybe lecture time was not enough to dive deeper into it, but sometimes it was weird to just skip it, though still able to catch–up with the live lectures.
The professor
You basically have to self–learn everything because the lectures do not really explain much and are kind of useless.
I disliked how the exams and tutorials were a little unstructured in that the expectations of both are not communicated properly to students. I also did not like the lack of past year papers but I understand that this cannot be helped. Perhaps next time they could upload a mock paper.
nil
Unclear explanation
Too much homework.
The content delivery
Heavy workload
The mini–project was somewhat difficult.
The lectures only focused on providing the high level ideas without going much into the nitty gritty details.
Midterm grading schema is too harsh
very unforgiving in terms of grades
Lack of in depth focus of AI (particularly in the 2nd half where we are focusing on deep learning). It is actually really hard for us to apply the neural network to modern concepts mainly due to the lack neural network architectures. Students will not really be able to create and apply the concepts to many real life concepts as they will be heavily limited to just using the basic cnn or rnn for the projects and implementations. Another problem is the abstraction of mathematical concepts in the module. I understand that it is to ensure that all students can understand and digest the concepts without being bombarded with mathematics. But certain topics are really hard to understand clearly without explaining the underlying mathematics. I think we should include some form of additional helpful information regarding the mathematics for students who are curious and interested to learn more. Another improvement could be similar to CS2040S and CS3230 where we can have optional graded assignments that students who are interested can do in their freetime and we can cover more advanced topics, variations and applications of the topics taught in the lecture
n.a.
No clear guidance on new coding concepts taught in lectures. However, we are expected to know how to use these new modules in problem sets. Though are are some guidance in these problem sets, they often do not go into much detail as that would defeat the

Comments
purpose of the problem sets to test our understanding. More demonstrations or code explanations in lectures would be much appreciated, especially as often 10–15 minutes of each lecture is dedicated to break time, this time could be shortened to provide time for these code explanations
It feels like many topics and being crammed into this module and while you have a general idea of what's going on, you do not really have the capability to explain it well as everything is just touch and go.
Module still in its infancy, especially the practical final which is the first for this year. Makes it hard to prepare.
A lot of independent learning, as many concepts are glossed over in the lectures
research intensive, self–directed learning
Very heavy workload with high CAs
There was little to no help provided to learn those packages and thus there was a lot of time spent trying to implement the algorithms/ideas taught
It requires lots of independent learning
nil
Lectures seemed to add little value. Though fortunately the content structure is similar to Andrew Ng's ML course which was convenient.
Slides are not very clear and concepts are sometimes not well explained
AI
The lecture slides are difficult to understand outside of the lecture context
Nil
Not enough time during midterms
Too much mathematical derivations that were hand–waved
ML
–
Somewhat too terse on explanations.