

Comments Please see the attached report from Tim Morris and Xiao-Jun Zeng

Comp 14112 Exam Feedbacks – Part 1 (Questions 1 and 2)

General Feedback:

- Among 183 students, 70% students answered question 1 and 30% students answered question 2. This distribution is exactly same as the last year. The reason behind (as the previous years) is that the students did a lab exercise related to Question 1 and so they are more familiar to the related topic.
- The average mark for Part 1 is 68%, in which the average mark for question 1 is 68.6% whereas the average mark for question 2 is 66.6%. Therefore the difficulties between two questions are roughly similar. Overall, the exam results are about the same as the last years when the average marks were around 68.9%.
- 18 or 9.8% students received a mark of less than 40% (i.e., 7 marks or less). This is better than the last year when 13.8% students with the marks of less than 40%.
- 96 or 52.5% students received a mark of 70% or better (i.e., 14 marks or more). This is a little less than 56% of the last year.
- 51 or 28% received a mark between 50% and 69%, which is more than 22% of the last year; 18 or 9.8% received a mark between 40% and 49% which is a little less than 12% of the last year
- General speaking, the students' performance in Part 1 is very good with the average mark as 68%, in particular only 9.8% students get less 40% marks, which are better than previous years.

Detailed Feedbacks for Question 1:

- Question a). Most students answer this question correctly. A small number of students had mistakenly answered “what is the robot localization problem” rather than the asked question “why is the probabilistic approach needed”.
- Question b). Most students answer questions b.ii) and b.iii) correctly but many answers to question b.i) is less accurate or incomplete. For question b.i) “give the probability representation of the distance between R1 and R2, the correct answer is “the distance between R1 and R2 can be represented as a two-dimensional vector, $[d, p(d)], d = 1, 2, \dots, 10$, where $p(d)$ represents the probability that the distance is d units”. The most comment mistake is the 2th dimension or attribute, $p(d)$, was missed. Further for question b.iii), some answers have not taken into account the condition “robot R1 moves 2 units accurately toward to R2” and led to an incorrect answer.
- Question c). Almost all students answer this question correctly except a small number of calculation mistakes.
- Question d) More than half students answered this question completely. The correct solution should use the extended total probability formula, but a small number of mistakes wrongly used Bayes theorem.
- Question e). More than half of students answer this proof type of question correctly but some students had not been able to give the proof or gave an incomplete proof.

Detailed Feedbacks for Question 2:

- Question a). Most students answer this proof type of question correctly, but a small number of students had not been able to give the proof or gave an incomplete proof.
- Question b). Most students know how to answer this question, but there are a small number of students who made the calculation errors. Further some students forgot to answer “What is a Dutch book” which is asked first in the question.
- Question c). Most students knew how to solve this question and got the correct answer. The common mistake is the incorrect analysis or calculation which led to the wrong answer.
- Question d). About half students answered this question correctly and completely. The common mistake is just using Bayes’ Theorem to give the correct probabilities of “stick” or “switch”, rather than answering the asked question which is to identify and analyse the error of the given probabilistic reasoning.

COMP14112
Fundamentals of AI

Section B

The average for section B was about 62%
Comments about the individual questions are below.

Question 3

17 candidates answered this question. The question was based on material from the first two lectures and the first lab of the second part of this course. Some answered the question very well, others had forgotten or misunderstood quite fundamental principles. The average mark was $45 \pm 23\%$.

Question 4

127 candidates answered this question. It was a very straightforward question, based around a problem to be solved. Students who, I assume, had studied the material performed well, as the average mark was quite high: $65 \pm 23\%$.

Marks were lost for:

- miscounting transitions in part b
- omitting an explanation in part c
- failing to use Bayes rule in part d

The mark distribution is shown below:

