



**Maynooth
University**

National University
of Ireland Maynooth

BSc in Robotics and Intelligent Devices

Year 2

**AUTUMN REPEAT EXAMINATION
2018-2019**

**EE220
Intelligent & Connected Machines in Society**

Prof. Ronan Farrell

Time allowed: 2 hours

Answer *all* parts of Question 1 and *one* part of Question 2

QUESTION 1

For each of the following questions, write brief answers. Answers should typically be between 40 and 100 words.

- S3-41 (a) Briefly describe the four types of human or operator induced failure and in a case of liability, who would be responsible in each case. (5 marks)
- S3-43 (b) List and explain the different fault management strategies that should be used to prevent failures. (5 marks)
- (c) Explain what is meant by responsibility, and why it is important. (5 marks)
- S6-20~25 (d) Explain the principle of “Principle of Ontogeny Non-Discrimination” and why it is relevant to the issue of autonomous machines. (5 marks) D不会考
- S6-2~4 (e) Briefly explain the issues around training and training data for the development of autonomous systems (5 marks) 会考moral status!
- S4-P1-2-3 (f) Discuss the issues around “If drunk, do you have the legal authority to authorise a self-driving car to take you home?” (5 marks)
- S5 P4-5 (g) What is meant by “event-data records” and why are they considered important? (5 marks)
- S9 11-14 (h) Explain the challenges in achieving reliable neural interfaces. (5 marks)
- S6 43-47 (i) What is meant by the concept “Deep Stupidity”? (5 marks)
- S8 14 (j) Explain the differences in perception for smooth rounded objects and sharp-pointy objects. What impact does this have? (5 marks)
- S5 3 (k) Explain the difference between autonomous and semi-autonomous machines. (5 marks)
- S1 24 (l) What was the reason behind the Luddite Movement in 18th Century England? (5 marks)

QUESTION 2

Write an essay on **one** of the following topics.

(40 marks)

- On societal impact: Over the past two centuries, technology has created significant social upheaval. In the coming decades, the capabilities of intelligent devices, mobile and static, are likely to create an unprecedented level of change in our society. Write an essay on the key changes that you expect in the next twenty years, their impact, and the issues that will need to be addressed to ensure a minimum of negative change. As a hint, issues such as ethics, criminal usage, employment changes are topics that might be included in this essay, but many other issues are equally valid.

OR

- On medical technology - The use of technology to enhance or repair the human body – for example prosthetics or augmentation. In your essay, provide some context on recent trends in this area and the ethical issues that may arise from these trends. Finally, in your essay, explain the term “uncanny valley” and how it may apply to human augmentation.

OR

- On trust in autonomous machines in society. In your essay focus on issues that may result in a lack of trust or increased concern about the responsibility awarded to an autonomous device. This is multi-faceted problem so provide multiple reasons for this issue and the context in which trust is an issue. Ensure that you provide examples to highlight your answers. Discussions of militarised autonomous systems are not acceptable.

This must be a substantive essay. It should contain between 1000 and 2000 words (approximately 4-6 pages). Marks will be provided for both the validity of the content, the structure and quality of the essay.