

คณะวิศวกรรมศาสตร์
มหาวิทยาลัยสงขลานครินทร์

สอบกลางภาค ประจำปีการศึกษาที่ 2

ประจำปีการศึกษา 2550

วันที่ 30 ธันวาคม 2550

เวลา 13:30 – 15:30 น.

วิชา 217 - 481 Artificial Intelligence and Robotics

ห้อง A203

คำสั่ง

1. ข้อสอบมีทั้งหมด 3 ข้อ ให้ทำทุกข้อ
2. ไม่อนุญาตให้นำ โน้ต ตำรา หรือเอกสารใดๆ เข้าห้องสอบ
3. อนุญาตให้นำพจนานุกรมคำศัพท์ภาษาอังกฤษเข้าห้องสอบได้

ชื่อ.....นามสกุล..... รหัส.....

ข้อ	คะแนนเต็ม	คะแนนที่ได้
1	20	
2	10	
3	20	
รวม	50	

อ. ชลิตา หิรัญสุข
ผู้ออกข้อสอบ

217-481: Artificial Intelligence and Robotics

Tutor: *Chalita Hiransoog*

Note: Only dictionaries (both paper copies and electronic dictionaries) are allowed into this examination. Answers are expected in English and show all working when possible.

Question 1: General Knowledge for Artificial Intelligence

1.1 According to Alan Turing, what are the four characteristics that a machine should exhibit for it to become 'intelligent'? And please explain in a bit more detail of each of the characteristics answered in the former question. (5 marks)

1.2 What is the modern definition of Artificial Intelligence (AI)? (5 marks)

1.3 Compare between 'strong AI' and 'weak AI'. (5 marks)

1.4 What is the goal of an AI system in each of the following task: Perception, Cognition, and Execution? (5 marks)

Question 2: Task Analysis

Task analysis is the study of what people do when they carry out tasks. The sta t of a task analysis is usually to break down an observed task into a hierarchy of subtasks, accompanied by plans that describe in what order and under what conditions the subtasks are performed. Draw a task hierarchy diagram for the task of 'washing the dishes'. (10 marks)

Question 3: Robot Senses

Intelligent Vehicle based on Visual Information

Road Line Detection and Classification:

3.1 For the road line classification task, what is the effect of the Fast Fourier Transform when applied to the line profile vector? (5 marks)

Pedestrian Detection:

3.2 a) When is the concept of strong vertical symmetry used in pedestrian detection task? (3 marks)

3.2 b) In order to follow the contour of pedestrians, what should remain constant between frames? (2 marks)

Traffic Sign Detection and Classification:

3.4 What are the reasons for traffic sign's appearance to have fuzzy edges? (5 marks)

Vehicle Detection:

3.3 What are advantages and disadvantages of distance sensor such as radar or laser over vision (image from camera) in vehicle detection task? (5 marks)

Traffic Sign Detection and Classification:

3.4 What are the reasons for traffic sign's appearance to have fuzzy edges? (5 marks)
