Teaching Plan of MA2011 Module I

Dr Yiyu CAI

Instructor, Module 1

9 Jan 2023

JANUARY 2023

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
8	9 4:30-5:20 LT 5 Lecture1 Debriefing, Tutorials Briefing, Intro to Robotics Research @ SNCL	10	11	12	13	14
15	16 4:30-5:20 LT5 Lecture2 Debriefing, Project Briefing, Intro to Underwater Robots Research @ SNJL	17	18 1:30-2:20 ARC TR+37 Tutorial 1 – MA1 2:30-3:20 ARC TR+37 Tutorial 1 – MA2	19	20	21
22	23 CNY Public Holiday 4:30-5:20 Lecture3 No Meeting	24	25 1:30-2:20 ARC TR+37 Tutorial 2 – MA1 2:30-3:20 ARC TR+37 Tutorial 2 – MA2	26	27	28
29	30 4:30-5:20 LT5 Lecture4 Debriefing, Intro to Robotic Club @MAE, Project Discussion	31				

2023 FEBRUARY

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1 1:30-2:20 ARC TR+37 Tutorial 3 – MA1 2:30-3:20 ARC TR+37 Tutorial 3 – MA2	2	3	4
5	6 4:30-5:20 LT 5 Lecture5 Debriefing, Project Discussion	7	8 1:30-2:20 ARC TR+37 Tutorial 4 – MA1 2:30-3:20 ARC TR+37 Tutorial 4 – MA2	9	10	11
12	13 4:30-5:20 LT5 Lecture6 Debriefing, Project Discussion	14	15 1:30-2:20 ARC TR+37 Tutorials 5&6 – MA1 2:30-3:20 ARC TR+37 Tutorials 5&6 – MA2	16	17	18
19	20 1:30-5:20 LT5 MA1 Project Presentation	21	22 1:30-5:20 ARC TR+37 MA2 Project Presentation	23	24	25
26	27	28				

Recess

Lectures

Lecture #	Topic	Remark
1	SYSTEM RESPONSE	Week 1
2	FOURIER SERIES THEORY	Week 2
3	DYNAMIC SYSTEM RESPONSE	Week 3
4	SAMPLING	Week 4
5	ANALOG SIGNAL PROCESSING USING OPERATIONAL AMPLIFIERS	Week 5
6	A/D CONVERSION	Week 6

Tutorials

Tutorial #	Topic	Remark
1	SYSTEM RESPONSE (Lecture 1)	Week 2
2	FOURIER SERIES THEORY (Lecture 2)	Week 3
3	DYNAMIC SYSTEM RESPONSE (Lecture 3)	Week 4
4	SAMPLING (Lecture 4)	Week 5
5	ANALOG SIGNAL PROCESSING USING OPERATIONAL AMPLIFIERS (Lecture 5), and A/D CONVERSION (Lecture 6)	Week 6

Group #	Teaming		Remark
MA1	Odd Teams	MA1-O-1:	
		MA1-O-2:	
		MA1-O-3:	
		MA1-O-4:	
		MA1-O-5:	
		MA1-O-6:	
	Even Teams	MA1-E-1:	
		MA1-E-2:	
		MA1-E-3:	
		MA1-E-4:	
		MA1-E-5:	
		MA1-E-6:	Max 5 persons per team
MA2	Odd Teams	MA2-O-1:	
		MA2-O-2:	
		MA2-O-3:	
		MA2-O-4:	
		MA2-O-5:	
		MA2-O-6:	
	Even Teams	MA2-E-1:	
		MA2-E-2:	
		MA2-E-3:	
		MA2-E-4:	
		MA2-E-5:	
		MA2-E-6:	

Tutorials/Project Teaming

Tutorials – Hybrid Mode

Please self-enroll the suitable teams with the MA2011 @ NTULearn

Tutorial # (Week)	Topic	Physical	Online
1 (Week 2)	SYSTEM RESPONSE (Lecture 1)	MA1-O	MA1-E
		MA2-O	MA2-E
2 (Week 3)	FOURIER SERIES THEORY (Lecture 2)	MA1-E	MA1-O
		MA2-E	MA2-O
3 (Week 4)	DYNAMIC SYSTEM RESPONSE (Lecture 3)	MA1-O	MA1-E
		MA2-O	MA2-E
4 (Week 5)	SAMPLING (Lecture 4)	MA1-E	MA1-O
		MA2-E	MA2-O
5 (Week 6)	ANALOG SIGNAL PROCESSING USING OPERATIONAL AMPLIFIERS (Lecture 5), and A/D CONVERSION (Lecture 6)	MA1-O	MA1-E
		MA2-O	MA2-E

Project

Week #	Topic	Remark
1	Completion of Project Teaming	Max 5 in a team (same team for tutorial)
2	Announcement of Project	
3	Project Time	Part of the Lecture time allocated will be used for project discussion
4		
5		
6		
7	Project Presentation	During lecture and tutorial time

SJ-NTU Corp Lab

Principal Investigator: Dr Cai Yiyu

Senior Research Fellow: Dr Liang Nanying

Building Imaging Group

Building Imaging | Surbana Jurong-NTU Corporate Laboratory | NTU Singapore

iSCAN2BIM

https://myycai.wixsite.com/iscan2bim

SAAB-NTU Joint Lab

Principal Investigator: Dr Cai Yiyu

Research Fellow: Dr Dinh Huy

PhD Student: Abu Bakr Azam

Underwater Robotics Research

Underwater Robotics Project | Saab-NTU Joint Lab | NTU Singapore

Robotics Club

Advisor: Dr Cai Yiyu

President:

NVIDIA Ambassadors Program
International Competition
Industrial Project
Event Organisation

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE | SAAB | PURDUE UNIVERSITY

LIVE WEBINAR
FRIDAY, 14 JAN 2022
20:30 SGT | 13:30 CET | 07:30 EST

Saab – NTU Joint Lab

UNDERWATER ROBOTS
Trends and Challenges

Underwater Robots: The Future of Mobility

Autonomous Underwater Vehicles (AUVs) are vital in applications like aquaculture surveys, hull cleaning and rescue operations. AUVs are chosen due to its compact size and their on-board artificial intelligence (AI) capabilities. Additionally, AUVs can cover wider areas and work for longer durations, while also being capable to explore restrictive areas where divers, ships or buoys would be unable to access. However, compared to other autonomous robots like Unmanned Aerial Vehicles, AUVs cannot depend on navigation methods like the Global Positioning System (GPS) due to severe attenuation of signals underwater.

Join us for a webinar examining the latest developments in Underwater Robots. Six distinguished speakers will share their cutting-edge research into a variety of topics, including robots for environmental sustainability approaches and improved design of robots.

WELCOME ADDRESS

Ms. Elizabeth A. Barajas
Director of Globalization,
Purdue University

Prof. Ooi Kim Tiow
Chair, School of Mechanical
and Aerospace Engineering.
Nanyang Technological University

SPEAKERS

Underwater agriculture robots (aquiculture)
Prof. Richard Voyles (Purdue)

Human and robot collaboration
Prof. Gerald Seet & Dr Dinh Q Huy (NTU)

Climate sensing underwater robots for long-term surveillance
Prof. Nina Mahmoudian (Purdue)

SNJL underwater robot research (TBF)
Dr. Andreas Gällström (Saab – Sweden) &
Prof. Yiyu Cai (NTU)

Environmental sampling robots for sediments and samples of rivers and lakes
Prof. BC Min (Purdue)

Estimation and experimental validation of AUV added mass coefficients
Dr. Basman Elhadidi (NTU)

CO-CHAIRS

Prof. Lu Chien-Tsung
Purdue Uiversity

Prof. Cai Yiyu
NTU Principal Investigator,
Underwater Robotics,
Saab-NTU Joint Lab

CLOSING REMARKS

Dr. Carrie Berger
Interim Dean,
Purdue Polytechnic Institute,
Purdue University

Dr. Jovice Ng
Research Director, Saab Singapore
Co-Director, Saab-NTU Joint Lab

About The Project
More detail will be given next week

X Application of Fourier Theory

Teaming: Max 5 people

MA2011

Contact me

Office: N3.2-01-08

Tel: 67905777 Cell: 90290242

Email: myycai@ntu.edu.sg

Wechat: YCaiSG

MA2011 WeChat or Whatsapp Groups (TBF)