INTERNET OF THINGS SOFTWARE PERSPECTIVE COURSE OVERVIEW

AARHUS UNIVERSITY
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

16 AUGUST 2021

JUNG MIN KIM
ASSISTANT PROFESSOR

LECTURER

Full Name: “Jenny” Jung Min Kim / Jung Min (Jenny) Kim

- Nickname: “Jenny”
- Official First name: Jung Min
- Surname (efternavn): Kim
- Nationality: Korean
- E-mail: jmk@ece.au.dk

About the Lecturer :

- 22 years of experience in several international companies both in Denmark and Korea
- Software engineer/Senior Research Engineer/SW Architect /IoT Technology Research Lead (Proof of Concept)
- Mobile Software Protocol Stack (2G, 3G, 4G) Research & Development
- Smart Grid, Web Software Full Stack (front-/backend), Framework
- Wireless Communication Network Software Protocol Stack (LTE, 5G NBIoT, other)
- Internet of Things Protocol Stack Architecture Design and Development

COURSE LOCATION / HOURS

Lecture location & Time

- Edison Building (5125), **140**
- Friday 12:15 - 16:00

Semester start & end

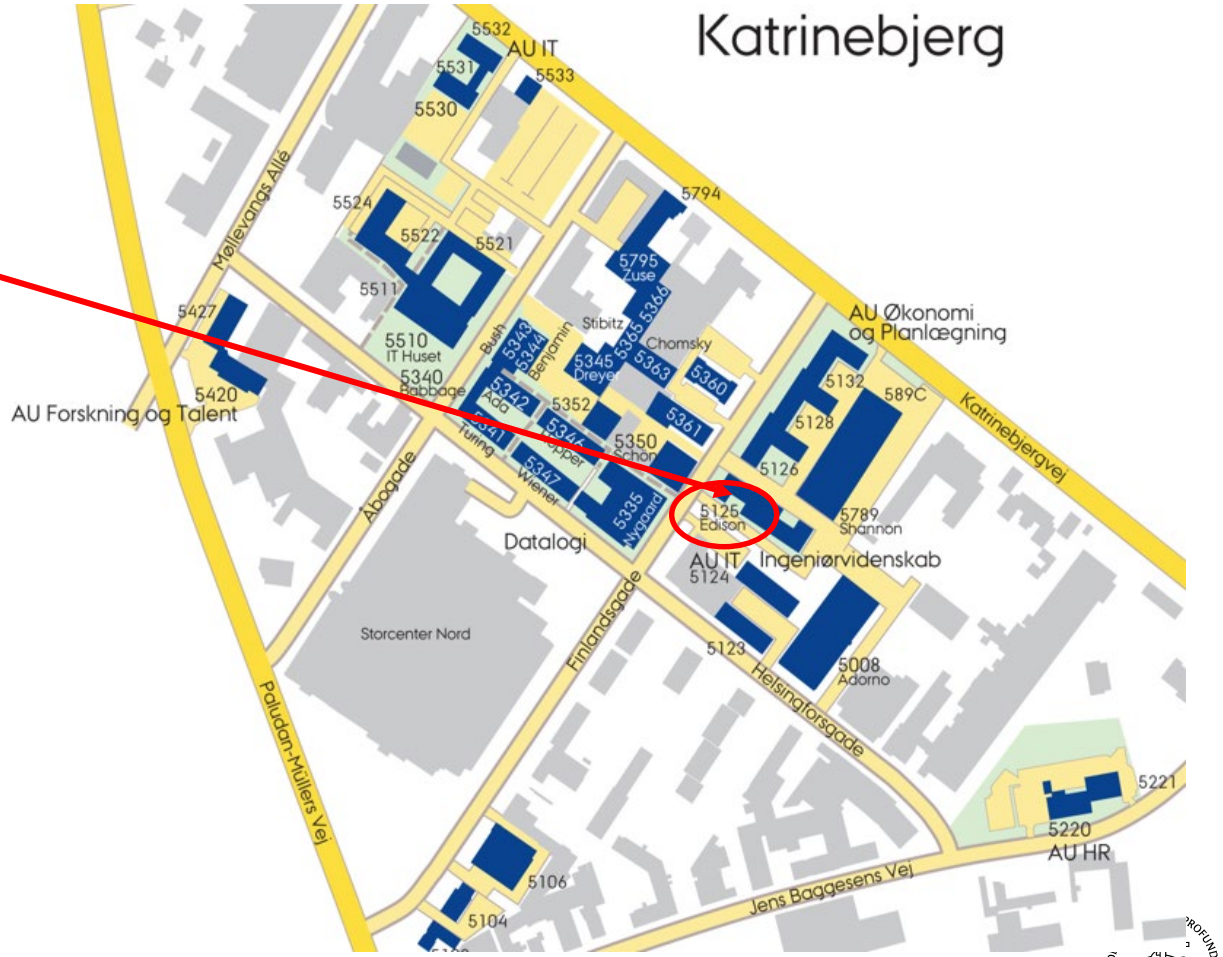
- First SWIOT/SWEXIOT Lecture
  - Friday, September 2, 2022
- Semester End/Last lecture :
  - Friday, December 9, 2022

AU Autumn "Lecture" Break

- Calendar Week 42
  - Mon, Oct 17, 2022 – Fri, Oct 21, 2022
- No Lectures but usually project working work

Mandatory Project Delivery

- Project delivery Deadline: week 49-50



COURSE OVERVIEW

BrightSpace : brightspace.au.dk

- SWIOT-01 Internet of Things: Software Perspektiv
- SWEXIOT-01 (International students*)

Course Material

- Several books, technical reports, scientific journals
- Included reference link, book titles at the end of course slides.

Group work (2-4 persons)

- First four weeks of the course: building the idea for the group project
- Group Presentation of the project idea in the 5th week
- Group presentations both in the middle and at the end of course
- If unable to find a group, mail to the instructor (jmk@ece.au.dk)

Mandatory Project Delivery

- **Everyone** must submit an IoT project as a group at the end of course
  - Short report (mandatory)
  - Software (mandatory)
  - Simulation Video (optional)

****Only for International Exchange Students**

- BrightSpace course title SWIOT-01 is also for SWEXIOT-01 Internet of Things: Software Perspective
- Oral exam after course complete (20 minutes per individual)
- Based on project report plus project work and theoretical parts from the course.
- Exam date : TBD (Announced by AU Administrative in early December)

LEARNING OUTCOMES

When the course is completed, the students are expected to be able to:

- Explain Internet of Things concepts and technologies, including challenges and possibilities.
- Explain the major components in Internet of Things from a software perspective.
- Apply and describe Internet of Things software architecture.
- Apply and describe Internet of Things software development techniques.
- Identify the difference between IoT Protocol stack and IoT Framework.
- Describe how to build Internet of Things Protocol Stack.
- Describe how to apply different IoT Frameworks based on different technologies.
- Have insight into how to collect, format, store and visualize Internet of Things Data.
- Design and implement Internet of Things software and applications

CONTENTS OF THE COURSE

- Internet of Things Introduction
- Internet of Things Architecture
- Internet of Things Communication Networks, Protocols and Software
- Internet of Things Devices, Smart Things and Software
- Internet of Things Cloud, Networks and Frameworks
- Internet of Things Web Applications, Web of Things and Software
- Internet of Things Data Insight
- Developing Internet of Things Software and Applications

Lecture plan

Calendar week	Lecture week	Lecture Content	Student Activity	Date
35	L1	Course Overview Internet of Things Introduction		2022-SEP-2
36	L2	Internet of Things Architecture		2022-SEP-9
37	L3	Internet of Things Communication Networks, Protocols, and Software		2022-SEP-16
38	L4	Internet of Things Devices, Smart Things and Software		2022-SEP-23
39	L5	**[Group Presentation] : Project Idea**	Students Presentation	2022-SEP-30
40	L6	Internet of Things Cloud, Networks and Frameworks		2022-OCT-7
41	L7	Internet of Things Web Applications, Web of Things and Software		2022-OCT-14
42		No Lecture		
43	L8	Internet of Things Data Insight		2022-OCT-28
44	L9	**[Group Presentation] : Project Status (Architecture, Design & Challenges)**	Students Presentation	2022-NOV-4
45	L10	Internet of Things Software and Applications		2022-NOV-11
46	L11	Internet of Things		2022-NOV-18
47	L12	Internet of Things		2022-NOV-25
48	L13	Internet of Things		2022-DEC-2
49	L14	**[Group Presentation] : Final Presentation** **Evaluation**	Students Presentation	2022-DEC-9
50			Project delivery	

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