Postgraduate course

Principles of Internet of Things (6 hp)

Internet of Things (IoT) can be regarded as wireless sensor networks linked to the Internet, providing digitalized cloud services. IoT is by no means of new technology, but to provide solutions for digitalization of the physical world. This course will provide postgraduate students with basic principles of IoT, covering wireless communication fundamentals, data encoding, modulation and visualization techniques, protocols and networks as well as IoT security, reliability and application development.

The course is given in a form of lectures. Students will get course points, provided that he or she participates in planned lectures (at least 70%) and submits a written report afterwards. The report (>5 A4 pages) can be written in either Swedish or English and can include illustrations (<2 A4 pages). The report should reflect a person’s understanding of fundamental principles of Internet of Things with respect to (1) his/her own research work, or (2) a topic list to be provided by the course examiner by the end of the course period.

Course language: English
Course literature: Handouts in English
Course period: 7th October – 29th November 2019, every Monday except the last lecture on Friday
Place: TP6113, Täppan, LiU Norrköping
Examiner: Prof. Shaofang Gong, e-mail: shaofang.gong@liu.se

Lecture topics (2 hours per lecture)

1. Introduction to Internet of Things—Shaofang Gong
   10:15 – 12:00, 7th of October
2. Wireless communication basics—Shaofang Gong
   10:15 – 12:00, 14th of October
3. Data encoding—Shaofang Gong
   10:15 – 12:00, 21st of October
4. Data modulation—Shaofang Gong
   10:15 – 12:00, 28th of October
5. Protocols and networks—Shaofang Gong
   10:15 – 12:00, 4th of November
6. Cloud and services—Yu Liu
   10:15 – 12:00, 11th of November
7. Security and reliability—Yu Liu
   10:15 – 12:00, 18th of November
8. Data visualization—Kahin Akram Hassan
   10:15 – 12:00, 25th of November
9. Application development case—Yu Liu
   10:15 – 12:00, 29th of November (Friday)