Advanced seminar

AI Planning for Ubiquitous Computing

Description

Ubiquitous computing aims at creating ambience in which one’s experiences and quality of life are improved by monitoring and assisting people using Internet of Things and intelligence in coherence. The current level of intelligence in ubiquitous computing environments is achieved by using predefined sequences of actions that are usually executed in conditions determined in advance and for well-known situations. Such level of intelligence is limited in that it cannot deal with the dynamics and uncertainty of ubiquitous computing environments, it does not consider the needs of those populating the environments, and it is ignorant of some global objectives, such as energy saving. Ubiquitous computing is therefore in need of techniques that go beyond predefined solutions, and act automatically with sophisticated intelligence. The field of Artificial Intelligence (AI) focuses on developing highly flexible and effective systems for intelligent behaviour, where AI planning provides means for automated and dynamic creation of plans. The field of AI planning was initiated in 1970’s and has made significant progress in theory and practice since. AI planning provides powerful techniques that require a goal, an initial state of an environment, and some knowledge about the environment to select and combine a course of action that, when executed in the initial state, achieves the goal. This makes AI planning highly suitable for ubiquitous computing. In this advanced seminar, we will study works that propose AI planning approaches for ubiquitous computing environments.

Prerequisites

Previous knowledge of the course “Smart Cities and Internet of Things” is helpful but not necessary.

Procedure

There will be a kick-off meeting at the beginning of the semester during which seminar topics will be introduced. Students should select three topics in preference order and inform us. Topics will be distributed based on priority while considering the topic preferences. Students are requested to research the topic, write a paper, and prepare an oral presentation. The advanced seminar will be held as a block event at the end of the lecture period of the semester. There are no meetings between the kick-off meeting and the block event.
Paper
Students have to hand in a written paper of maximum 15 pages about the chosen topic. The paper should be prepared using LaTeX. A template and instructions will be provided. Students must submit the paper two weeks after the block event.

Presentation
Students have to give an oral presentation of about 25 minutes. A template will be provided. Students must submit the first draft of the presentation to the supervisor one week before the block event. Students must submit the final presentation to the supervisor on the day of block event.

Participation
Students have to be present at the kick-off meeting and the block event.

Grading
The presentations, papers and active participation will be graded.

Language
Presentations and papers must be in English.

Topics
TBD