

Aim of course

The quick pace of technological progress in the IT-related industries made the vision of our ambient environment equipped with embedded processors, wireless communication facilities and embedded software able to perceive, perform and control a multitude of tasks and functions - an emerging reality. This pervasive and ubiquitous computing landscape is characterized by dynamic, context-aware, ad-hoc interoperable services. The underlying hard- and soft-ware will be sensitive, adaptive and responsive to our needs, habits and emotions. With pervasive computing technology embodied into real world objects like furniture, clothing, crafts, rooms, etc., those artifacts also become the interface to seamless, anticipatory services which mediate between the physical and digital (or virtual) worlds via natural interaction. Such an environment poses serious challenges to the conceptual architectures of computing, and the related engineering disciplines in computer science.

Subject of course

This course addresses all areas of pervasive and ubiquitous computing with the objective to discuss and explore latest technical developments in this emerging field as well as to identify potential future directions and issues.

Topics

- Ambient intelligence
- Pervasive and ubiquitous (ambient) computing architectures and platforms
- Middleware and computing infrastructures for ambient intelligence
- Computational perception
- Multi-agent systems as mechanism for ambient intelligence
- Ad-hoc wireless and mobile communication
- Networked embedded systems
- Context awareness and intelligent sensors
- User interfaces for invisible and embedded computing
- Emerging industrial or business scenarios
- Methodologies for design, implementation and evaluation of pervasive and ubiquitous computing applications
- Security, trust and privacy issues in an ambient intelligence environment