



## Topic: Context-Aware Ubiquitous Wireless Charging Array

Goal: This project aims at creating a context-aware transmission array for safe and efficient energy transmission through coupling of AC Magnetic Field. This work will open the possibility of charging mobile devices at the same time of their normal operating. (For example, to charge a mouse from the mouse pad even when the user is actively moving the mouse).

### Workflow:

Month 1: get familiar wireless charging, system design  
Month 2: selection of proper components, building prototype boards  
Month 3: context-aware algorithms development  
Month 4: evaluate and improve transmission efficiency under one scenario (e.g. a mouse on its mouse pad)  
Month 5: implementation of the same design into another scenario (e.g. a shoe on the floor)  
Month 6: documentation, paper and thesis writing

### Advantages:

- 1) You'll have an easy start: This work will be based on earlier work of the Wearable Computing Lab (WCL), where single coil to single coil wireless charging for mobile devices has been created and evaluated. The student can have an easy start by reading the comprehensive documents created by former students.
- 2) possibility of participating the applying process of a German patent and even be on the patent holder list.
- 3) possibility of writing a paper based on the thesis

### Requirements:

- . Very good understanding of EM Field and inductive coupling
- . Experience in Analog Circuit Design
- . Experience with Microcontroller/DSP(s) and Microcontroller/DSP Programming
- . Experience and joy with handwork
- . Good written and oral English