

Master Thesis

Metal Object Detection for Safe Wireless Power Transfer

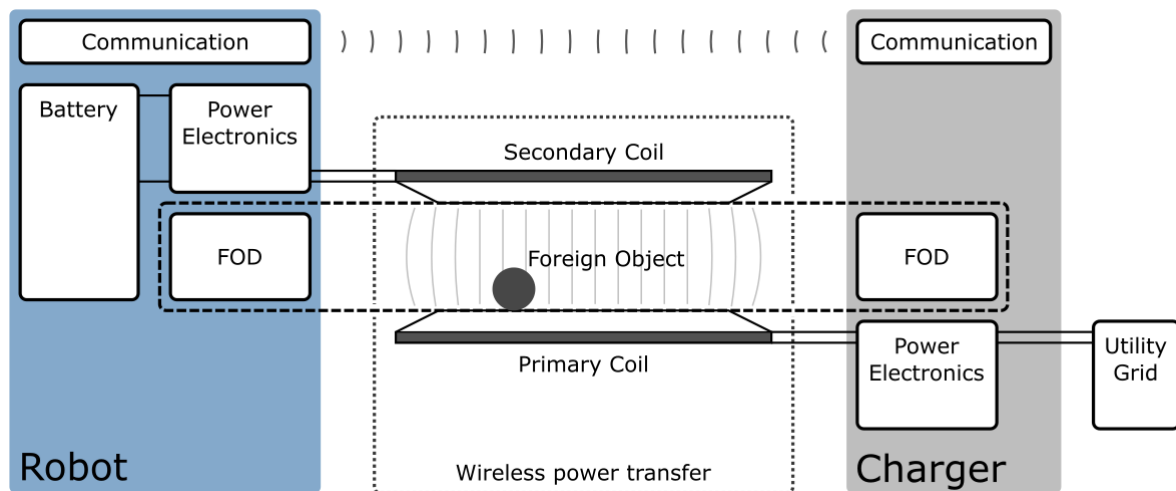
The company Blue Inductive develops wireless battery chargers for mobile robots and electric vehicles. To increase the safety of our systems, we are looking for a highly motivated student to develop a Metal Object Detection (MOD) concept for wireless power transfer systems.

Background

Based on the principle of magnetic induction it is possible to transfer energy wirelessly from a transmitter to a receiver coil. Metal objects placed in between these coils will heat up due to induced eddy currents. This leads to a reduction in energy efficiency and to a potential source of danger (burn, injury, damage of housing, fire).

In the scope of the proposed project, different concepts to reliably detect metal objects in the space between the transmitter and receiver coils will be identified and compared. This includes, for example, inductive and capacitive proximity sensing, direct and/or indirect sensing of temperature rise and other methods. Based on the findings a proof-of-concept prototype will be designed and integrated into an existing 3 kW wireless charger.

Besides the realization of the basic functionality, the challenge is to develop a solution which is robust enough to reliably operate within the electromagnetic field of the wireless energy transfer system.



This position can be filled immediately. Previous experience in RF/Analog circuit design is mandatory. We grant access to well-equipped industry standard laboratories and offer intense supervision by a highly motivated young team. Thesis will be jointly supervised by Blue Inductive GmbH and IMTEK.

Interested applicants please contact:

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