

Bachelor thesis or study project (Forschungsarbeit) Design of an FPGA-based data processing platform

Magnetic resonance imaging (MRI) scanners are increasingly complemented with smart nuclear magnetic resonance (NMR) sensors to perform, e. g., motion correction, or field monitoring tasks. With our signature NMR-on-a-chip technology, at the IIS, we are able to design miniaturized large-scale arrays of NMR sensors that provide unprecedented performance in a tiny form factor. To read out these sensor arrays, we use a PXI-based FPGA platform in combination with FlexRIO adapter modules to carry out custom signal processing.

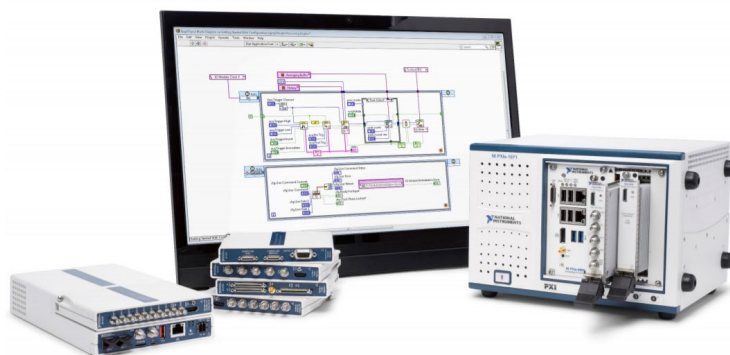
You will program an FPGA with LabVIEW to implement different data processing algorithms. You will also work with Altium Designer and get practical experience with this industry-standard EDA tool for printed circuit board (PCB) design to design a PCB interfacing between our custom NMR-on-a-chip sensors and the FPGA.

Requirements:

- ✓ Basic knowledge in PCB circuit design
- ✓ Basic knowledge in Labview is an advantage

Duration: 3 months (or upon agreement)

Contact person: Jianyu Zhao, jianyu.zhao@iis.uni-stuttgart.de



Institute of Smart Sensors, Pfaffenwaldring 47, 70569 Stuttgart