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Offer for a 3-Months Internship for Bachelor Students

Topic:
Implementation of a Software Defined Radio evaluation setup based on the NI-PXI Platform

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Abstract:
When designing a radio frequency (RF) system, flexible communication platforms can be used for reducing the implementation time and parallelising both the evaluation and the simulation processes.
One of these platforms is the National Instruments Software Defined Radio (SDR) system, which consists of a NI PXIe-541R IF transceiver, a NI PXI-5600 down-converter, a NI-pxi5610 up-converter and a NI PXI-8106 controller. All of those modules are located in the NI-PXI1042Q chassis.
The SDR platform is fully programmable in the National Instruments programming language LabVIEW.. For that purpose a variety of toolkits are available like e.g. the advanced signal processing toolkit or the modulation toolkit. The big advantage of using LabVIEW is that the majority of the code can be used for both simulating the system as well as for evaluating the system in hardware.

Tasks:
In this project a flexible LabVIEW framework for the NI SDR platform has to be designed. This framework must be capable of generating, coding, modulating and transmitting signals on the one hand and receiving, demodulating and decoding the signals on the other hand.
The tasks to be carried out by the student are as follows:

- Get used to the SDR platform's architecture
- Get used to the LabVIEW programming language
- Write the necessary code for generation, de-/coding and de-/modulation of signals
- Write LabVIEW code to control the IF transceiver, the upconverter and the downconverter
- Combine the code into a flexible LabVIEW framework
- Write an example application where signals can be sent and received with the SDR platform
- Compare and evaluate: "simulation vs measurements".
- Documentation

Requirements:

- Experience in LabVIEW (desirable, but not a must)
- Basics in RF technology

Payment Conditions & Application:
Fraunhofer IIS will pay an appropriate allowance to cover living costs and will also provide for accommodation and medical insurance during your stay in Nuremberg. Travel expenses will not be reimbursed.

If you are interested in the afore-mentioned topic please send your formal application including CV, a copy of your *valid* passport or ID card, motivation letter, latest grades report and the date of your earliest possible start to:

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About the Fraunhofer IIS department "Locating & Communication Services":
For more than 20 years high frequency and microwave technology, positioning and wireless communication have been core areas of expertise at Fraunhofer IIS. Our developments in these areas are the basis for numerous trends currently dominating the research landscape. Our highly qualified and experienced team of almost 50 scientists has convinced numerous small, medium and large scale businesses which now benefit from our knowledge and innovative power. We are your contact point to a large network of research organizations, associations and industry and we support our customers through the entire process chain from product conception to the final product. Our research and development focus is on the areas antennas, wireless communication and positioning. Application areas are logistics, production, safety and automotive engineering, sports and recreation, as well as media and medical technology and many more.

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