Recruitment team
NOKIA Bell Labs

December 16, 2016

Dear Dr. Hans-Peter Mayer,

I will be graduating with a Doctor's degree in Electrical Engineering in January 2017 from Karlsruhe Institute of Technology, Karlsruhe, Germany.

My research primarily focuses on cognitive radio that presents an alternative approach of resolving spectrum demand for the upcoming 5G networks, by opportunistically accessing the licensed spectrum. The main objective of my research was to identify aspects (including signal uncertainty, noise uncertainty, channel knowledge and RF distortions) that are fundamental to the hardware implementation of cognitive radio systems.

The knowledge of the involved channels residing within a cognitive radio system is one such aspects dealt in my thesis. From the physical layer perspective, it has been identified that the channel knowledge is extremely necessary for the realization of the cognitive radio techniques (such as spectrum sensing and power control) on a hardware. An access to this knowledge allows a cognitive radio system to control the interference accumulated by the primary system. In my research, this notion has been extensively justified and resolved through adequate theoretical analysis while considering a hardware deployment. As a result, the theoretical findings are validated by means of hardware implementation using a software defined platform. A part of my findings was presented at CoMoRa project meetings, at which was Bell Labs was also involved.

I am approaching you in this matter because your department is involved with various technologies for next generation wireless systems, such as waveform design, spectrum opportunities and spatial signal processing, which are well aligned to my research interests.

In my perspective, I believe procurement of an additional source of spectrum – assuring connectivity to billions of devices and meeting huge volumes of mobile traffic – is one of the biggest challenges currently faced by the wireless community. Cognitive radio along with millimeter-wave technology and visible light communications, or their combination, are envisioned as the possible candidates that could overcome this demand of spectrum for future wireless standards. Investigating these aforementioned technologies is one such research area, where I would like to focus on. From the physical layer perspective, I believe that by analyzing the performance of these technologies or by resolving potential bottlenecks would promote their successful incorporation in future wireless standards. Besides, considering my industrial and research experience, I believe, I process skills to validate the major findings in the form of hardware implementations or demonstrations.

Despite the fact that the spectrum opportunities, particularly cognitive radio, are well associated to my research experience, I am equally inclined towards key technologies, including spatial signal processing (massive MIMO, 3D-beamforming), full-duplex transmissions and waveform design.

I assume, to a certain extent, I have conveyed my research interests to you and hope that my profile fits to your workgroup. I am looking forward to hearing from you. Please let me know if you need any further information.

Yours faithfully,
Ankit Kaushik