CALL FOR APPLICATIONS: PHD POSITION ON "V2V LF COMMUNICATION SYSTEM DEVELOPMENT

Company Description

The University of Navarra is a Catholic University founded in 1952. We are proud of our academic integrity, international focus and the professional development of our students. We are ranked 37th in the world in the 2017 QS Graduate Employability Ranking.
We are also ranked as the best Spanish private university by the "El Mundo" Ranking.
We are also 245th in the QS World University Ranking. Tecnun shares resources, facilities and personnel with its associated Research Centre, Ceit-IK4, a renowned multidisciplinary institution with more than 200 researchers that carry out applied reserach for companies at both the local and international level.

Information

Deadline: 2018-12-31
Category: Business
Province: Gipuzkoa
Country: Spain
City: San Sebastián

Company

Ceit

MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

Main functions, requisites & benefits

Main functions

Vehicle-to-Vehicle (V2V) communication is attracting significant attention as it promises to drastically reduce road fatalities, improve mobility and enable a high-level of vehicle autonomous driving.

Supporting safety critical applications is at the core of V2V communication, and for years, the main technology of choice has been IEEE802.11p. However, in some scenarios (tunnels, adverse climate events, crowded traffic…) the fast and direct localized communication with the car behind is not ensured.

To face this problem, University of Navarra, Ceit, and PREMO have joined to develop a new LF communication system that will make a direct communication with Low Frequencies (kHz) between successive cars possible. In this context, the present PhD will build on the following research challenges:

• Study of the use scenario and definition of the communication system specifications. Considering the LF emission regulation and the maximization of the communication range the system specifications will improve the State of the Art. • Design, fabrication and testing of the analog module of an LF emitter that accomplishes with the system specifications. • Design, fabrication and testing of the analog module of a high sensitivity LF receiver that accomplishes with the system specifications. This design will be done first using commercial components and second in an ASIC using a CMOS fabrication process. • Integration and testing of the whole communication system together with PREMO (antenna designer) and Ceit (digital protocol implementer). • Implementation and testing of the whole communication system demonstrator in the Electric Formula Student Car developed by the students of the University of Navarra.

Requisites

Telecommunications Engineering or Industrial Electronics and Control Engineering.
Degree completed by: 2014 or after (excluding the final project).
Languages: Good knowledge of English. Software: EDA tools.

Other: • A candidate used to the specification driven problem solving, ready to apply those methodologies in the design phases of the project. • A solid knowledge in electronic design is required: The candidate must be familiar with electronic elements such as current sources, amplifiers, ADCs, voltage references… • Experience in EDA design tools is required and knowing Cadence IC design flow is desired. • Basic knowledge of data transmission/reception is desired: The candidate should be familiar with concepts as SNR, BER, attenuation, Transmitted power, magnetic coupling…

Benefits