FICHE DE POSTE

Context :

There has been great interest in Ultra wide band technology in recent years because of its potential and large number of applications. In fact, The Ultra wide band technique operates with a low power spectral density. Such a low power spectral density implies that the UWB signal may be kept near or below the noise poor of hostile detection devices. Moreover, this technique allows a high data rate, and a high precision ranging due to its fine resolution to resolve mutipath fading and the presence of lower frequencies in the baseband to penetrate walls. Thanks to these additional capabilities, UWB technology seems well suited to new application areas such as railway transportation systems. Our goal is to evaluate the performances of MB-OFDM "ECMA-368" UWB technique for train- to- Infrastructure (V2I) communication system in terms of channel propriety and Doppler effects. In fact, the process of collecting the information in rich multipath environments and with doppler effects appears to be a very difficult task. In order to solve this effect, multiple receivers can be used such as Extended Kalman Filer (EKF) and the Maximum Likelihood Estimation (MLE). However, these receivers are very complex and require a lot of resources.
Moreover, the response time is a key element to verify proper operation of the system In our application.
The proposed study is about developing efficient receivers taking into account the constraint our application: response time, high data rate, low energetic consumption.

The candidate Profile:

The candidate should have experience of team work in R&D projects and abilities to project management. The duties include:
- Simulation and evaluated the UWB simulation in different environment (tunnel...) and in different scenarios.
- proposed the receiver in order to solve the Doppler effect
- Realisation and implementation of proposed solution in real time using the FPGA components.

Successful candidate will have unique opportunities to significantly contribute to technical (simulation, implementation, and evaluation), and management (liaise with investigators in other institutions, participate in new proposals, reporting)
Desired Skills: Experience in Signal processing, UWB technique, Matlab tools and FPGA design.
Education: A Ph.D in electronics or telecommunications is required.

Contact: fouzia.boukour@ifsttar.fr
Institution *: IFSTTAR-LEOST*
monthly remuneration charged : 3766,5 €
Date of employment: as soon as possible before beginning December 2013

Contract Period: 12 months