PhD proposal

« LiFi transmission with embedded cameras, application to automotive field »

University: ***Université de Versailles Saint-Quentin en Yvelines, FRANCE***
Laboratory: LISV: *Laboratoire d'Ingénierie des Systèmes de Versailles, Université de Versailles Saint-Quentin*
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Title of the proposal: *« LiFi transmission with embedded cameras, application to automotive field »*

Skills: informatics, image processing, embedded electronics (VHDL, FPGA, etc) and knowledge on optoelectronics

Subject:
The PhD student will work at the LISV/UVSQ laboratory as part of the collaboration with the start-up OLEDCOMM. His work will focus on activities related to VLC / Lifi (Light Fidelity), that is to say, the digital data transmission via visible light of LEDs. This growing field requires upstream research in order to develop in the future new products.

The laboratory is involved in LiFi transmission researches, especially in automotive field since 2007 (with a lot of collaborations with major companies in automotive industry). Several thesis have been defensed on this topic [1]. The previous works have mainly been developed on LiFi receiver based on photodetector component. In automotive field, the next step will be the intensive use of cameras for several applications. Cameras are cheap and easy to integrate, but their main drawback is their slow rate of refresh. Nevertheless, for low data rate, it can be useful. Furthermore, the treatment of several sources of light at the same time can compensate for a part the relative low bandwidth. The PhD student will be in charge to develop a system of cameras for LiFi transmission ; a first part will concern bibliography, a second part simulation of the system and a third part will aim to make a prototype.

[1] http://www.lisv.uvsq.fr/lisv-laboratoire-d-ingenierie-des-systemes-de-versailles/langue-fr/actualites/soutenances-de-theses/etude-realisation-et-optimisation-d-un-systeme-de-communication-par-lumiere-visible-application-au-domaine-de-l-automobile-par-alin-mihai-cailean-340525.kjsp?RH=1311755260155