**Study and implementation of position sensing architecture and algorithm for VLC**

**Mots clés:**
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- **Unité de recherche**: Laboratoire d'Informatique, Signal et Image, Électronique et Télécommunication
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- **Domaine scientifique principal**: Sciences pour l'ingénieur

**Résumé du projet de recherche (Langue 1)**

In 5G, a highly accurate localization from 10 m to less than 1 m on 80% occasions, and better than 1 m for indoor is reported through millimeter wave (mmW) at the expense of a high cost deployment. 5G - IoRL will provide a high accuracy location service by using low cost VLC - based indoor localization technologies. VLC location system holds potential to overcome the position's instability inherent to wireless channel thanks to the most multipath-free propagation brought by VLC. It can achieve decimeter to centimeter precision, using specialized “beaconing LEDs” as landmarks. However, this digital ID beaconing cannot be modified after its placement. During this PhD program, different position algorithms will be studied during the project to a high accurate position estimation objective. One demonstration based on USRP instrumentation should be realized.

**Résumé du projet de recherche (Langue 2)**

This PhD project proposes using the orthogonal frequency division multiplexing access (OFDMA) scheme, in which part of the subcarriers will be used for indoor positioning and where pilot tone will be at different frequencies for different LEDs. Contrary to classic all “beaconing LEDs”, the proposed system will be able to get receiver’s accurate position as well as providing data for communication.

**Informations complémentaires (Langue 1)**

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