Post-Doctoral position

Title:

UAV/UGV collaboration for an automated inventory in a logistics warehouse.

Project:

DRIVELOG (in partnership with Région Normandie (France), CRITT, DroneXTR and SDV-Bolloré).

Supervisor:

François Guérin (Associate professor HDR in Robotics and Automatic control).

Place and duration:

University of Le Havre (France) - GREAH (EA3220) – ISEL(PIL) / 10 months in 2017.

Main goal of the project and mission:

Inventory operations management is usually time consuming and expensive for logistics warehouse. The main goal of the project is to design an automated system combining UAV and UGV to perform autonomously an inventory in a logistics warehouse. The inventory operations will consist in using a drone to take pictures from the state of the racks (full/empty) and make a matching with their tags (QR or bar codes). The acquired information (pictures and tags) will then be uploaded to the Warehouse Management System (WMS) of the company.

Doing aerial shootings and detect tags like QR or bar codes supposed to position the drone very precisely with regards to the racks. Furthermore, indoor geolocalization system are expensive and quite difficult to implement inside a logistics warehouse. So, the project will consist in using collaborative aerial (UAV) and ground (UGV) mobile robots. The main task of the UGV will be to assist the UAV during the positioning phase (visual servoing) and to manage the navigation inside the warehouse. Moreover, unlike the UAV, the UGV includes a powerful embedded system able to host a web server for remote supervision, control and access with a standard web browser (internet explorer, firefox,...) and to store the acquired information.

Mobile robots used for the project:

UGV : Robotnik Summit XL HP (http://www.robotnik.eu/mobile-robots/summit-xl/) .
UAV : Dji Matrice 100 (http://www.dji.com/fr/matrice100).

References:

El Houssein Chouaib Harik, François Guérin, Frédéric Guinand, Jean-François Brethé, Hervé Pelvillain - "Towards An Autonomous Warehouse Inventory Scheme" - IEEE Symposium Series on Computational Intelligence (IEEE SSCI 2016) - Athens (Greece) - December 6-9, 2016.

El Houssein Chouaib Harik, François Guérin, Frédéric Guinand, Jean-François Brethé, Hervé Pelvillain - "Fuzzy Logic Controller For Predictive Vision Based Target Tracking With An Unmanned Aerial Vehicle" - International journal of the Robotics Society of Japan (RSJ) - Advanced Robotics (TADR) - DOI: 10.1080/01691864.2016.1271500

Skills required:

PhD in collaborative mobile robotics (UAV/UGV) and automatic control.
Strong abilities with ROS and programming in general (C/C++, C#, Java…).

How to apply:

Please send (before 21st January 2017) a CV, a cover letter, your list of publications, and a letter(s) of recommendation to: francois.guerin@univ-lehavre.fr