Engineer position (12 months)
CITI Lab. INSA Lyon – Inria Chroma
European project BugWright2

Experiments of cooperation between aerial and ground robots for inspection of large structures

Duration : 12 months

Level required : Engineer or Master

Function : Scientific Engineer in the INSA/INRIA Lyon *Chroma team*, CITI lab.

Context

Within the framework of the european project ***BugWright2*** (https://www.bugwright2.eu/), the CHROMA team explores multi-robot path planning and cooperation for inspection of large structures. The proposed mission is to build a demonstrator integrating results form the team and partners. This demonstrator will use a specific robotic platform including aerial robots from Chorma (PX4 Vision quadrotors) and tethered mobile robots (modified turtlebot from Chroma and crawlers from GT-CNRS Metz). Tethered robots are mobile robots attached to a cable, which have to move without crossing their cables.

Mission

- **Build a robotic demonstrator** and a **scenario** with aerial and ground robots, exploiting results of the BugWright2 project. Several algorithms [1][2] and experimental frameworks have been developed in Chroma and project partners. To manage and prepare experiments, the recruited engineer will also develop a **simulation** of the system based on the Chroma's simulator (using Gazebo/ROS). This work will be carried out in collaboration with the engineers of the Chroma team, in CITI lab.

  [1] P. Grippa, A. Renzagila, A. Rochebois, M. Schranz, O. Simonin "Inspection of Ship Hulls with Multiple UAVs: Exploiting Prior Information for Online Path Planning", IEEE/RSJ IROS 2022.

  [2] X. Peng, C. Solnon, O. Simonin, "Solving the Non-Crossing MAPF with Constraint Programming", the 27th Int. Conf. on Principles and Practice of Constraint Programming (CP) 2021

- Participate in the **BugWright2** project, interacting with partners and in particular with Cedric Pradalier's team in Metz and the LSL lab in Austria.
- Participate in meetings and demonstrations with the project's European partners.
- Participate in the writing of documentation on the simulations and experiments developed
- Participate in the writing of deliverables (in English) at the end of the project.

BugWright2 project : https://www.bugwright2.eu/

Chroma team : https://team.inria.fr/chroma/en/

Main activities

Robotic experimentation, simulation development with Gazebo/ROS/ROS2 and Python/C++.

Other activities : participation in the writing of reports/deliverables, presentations (in the BugWright2 project), and missions abroad for joint demonstrations.

Skills

Technical skills: C++ and Python programming, experience with GAZEBO and ROS, and experience with mobile robots.

Language: English (B2)

Relational skills: work in a team and in an intercultural environment.

Other valued appreciated: writing and communication of results, autonomy, rigor and dynamism.

Salary

From 2 570€ (gross salary), depending on the candidate's experience.

Advantages : 42 days off / year, 50% reimbursement of public transport costs, Access to INSA staff restaurant, Social, cultural and sporting activities via CASI INSA.

General information

- **City :** Villeurbanne (CITI lab., Campus de la Doua/INSA de Lyon)
- **Desired start date:** As soon as possible
- **Contract duration :** 12 months (with possible prolongation)
- **Deadline to apply :** 31/05/2023

Contact

- Olivier Simonin / olivier.simonin@insa-lyon.fr

  Send a detailed CV with a cover letter.