



## Robotic vision postdoc position (2 years)

**Title:** Omnidirectional vision-based orientation estimation and localization  
of a semi-autonomous wheelchair

**Place:** MIS laboratory, Université de Picardie Jules Verne, Amiens, France

**Supervisors:** Dr. Guillaume Caron and Dr. Fabio Morbidi

**Applications:** position opened now

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### **Subject:**

The two years postdoc position is funded by the French Hauts-de-France regional council in support of the EU Interreg IV A funded project: ADAPT, Assistive Devices for empowering disAbled People through robotic Technologies. Twelve partners are involved in this international project, including ESIGLEC Rouen (FR, leader), UPJV Amiens (FR), INSA Rennes (FR), Univ. of Kent (UK), Univ. College of London (UK) and health structures and companies on both sides of The Channel. A part of this project is dedicated to a smart wheelchair equipped with sensors, including panoramic vision, is under implementation in order to assist the disabled person, that is the precise context of the postdoc work.

The MIS lab, and particularly our Robotic Perception group, is very famous for its research on non-conventional vision, including omnidirectional cameras, for mobile robotics, for more than twenty years. Based on this knowledge and these skills, the postdoc fellow will first extend the existing dense visual compass for mobile robot orientation estimation, localization and navigation [Morbidi+ In RA-L 2017] to the challenging context of the ADAPT project, in real-time. Then, once familiar with the latter methodology, the postdoc fellow will extend it to consider a set of cameras, instead of an omnidirectional one, and urban 3D models as reference, outdoors. These new features have the potential to be better adapted to the smart wheelchair context and improve the robot localization in cities, thus providing interesting contributions to the research field.

### **Needed skills:**

- PhD degree in computer vision and mobile robotics
- very good computer vision and image processing knowledge (theory and practice)
- years of experience in object oriented programming (C++ ideally)

[Morbidi+ In RA-L 2017] F. Morbidi, G. Caron, **Phase Correlation for Dense Visual Compass from Omnidirectional Camera-Robot Images**, *IEEE Robotics and Automation Letters, RA-L*, Vol. 2, No. 2, pp. 688-695, April 2017.