Assignment

The PhD project will include the following tasks:

- Establish a bibliographic study on vibration analysis using contactless optical, acoustic and microwave methods.
Elaborate new methods for video image segmentation, based on the experiences of the team in this field.

Design and develop new vibration monitoring methods by combining image processing and vibration analysis.

Implement developed algorithms on GPUs (Graphical Processing Units) for real time applications.

Experiment on simple laboratory structures and on real applications. Compare with methods based on conventional sensors (accelerometers) and with other emerging methods.

Main activities

- Determination of the contours of the monitored structures on video images. The first studies will consist in adapting and testing existing methods, in particular an algorithm already developed by the team in other application contexts, particularly suitable for low-resolution images.
- Estimation of the motion signal of the structure to be monitored.
- Vibration analysis, including robustness analysis in case of low signal-to-noise ratio.
- Experiments in an IFSTTAR laboratory in Nantes, as well as on real world structures (wind turbine mast, gantry, bridge).

Benefits package

- Subsidised catering service
- Partially-reimbursed public transport
- Social security
- Sports facilities

Remuneration

Gross salary: 1982 euros