

## Projects for Industrial Innovation (Pi<sup>2</sup>)

Main tasks that can be requested in Pi<sup>2</sup>:

1. State of the art.
2. Comparative study of technical solutions to a given problem (feasibility, cost, etc ...).
3. Study of a given problem and proposition of an argumentative solution.
4. Realization of a Proof Of Concept.
5. Realization of technical tasks in a major project of the Partner.

The students of each department develop in A4, A5 specific technical skills. A project may be transverse to several departments, i.e. the team may consist of different departmental students. The purpose of the projects is to enable them to use these skills as well as to encourage them to acquire new ones. The discovery and the autonomous implementation of new technical fields is an integral part of the skills they must acquire. Depending on the departments, here are some technical areas to focus on:

### Computer Science, Big Data and IoT (IBO)

- Study, realization and implementation of IoT-IIoT devices
- Networking of IoT-IIoT devices
- Cloud computing
- Machine Learning
- Data Mining
- Devops
- AR / VR
- Data visualization
- Mobile development
- Web development (node / angular)
- Digital Healthcare

### Financial Engineering (IF)

- Pricing of financial instruments : technical design and / or implementation
- Quantitative or statistical analysis of data
- Time series analysis
- Asset management, analysis and portfolio management
- Development of innovative financial products
- Fintech / Insurtech: Bitcoin, Blockchain, DLT and applications
- Big data, ML and IA for finance
- Robotrading, roboadvisory, design / trading platform development
- Actuarial

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### Computational Mechanics and Modeling (MNM)

- Mechatronics, robotics
- Numerical modeling of structures
- Modeling complex systems
- Fluid mechanics and simulations
- Real time embedded software and systems
- Avionics and control systems
- Industrial Systems Engineering
- Multidisciplinary optimization and reliability

### Smart Energies (NE)

- Study, sizing of renewable installations
- Energy efficiency study
- Sensors / IoT
- Embedded systems
- Sustainable development
- Machine Learning
- Systems modeling
- Digital Healthcare