université PARIS-SACLAY

INSTITUTE DATAIA
Data Science, Intelligence & Society

D2C
DATAIA CLUB CONNECTION

# AI IN MECHANICAL ENGINEERING


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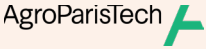
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# DATAIA PARIS-SACLAY INSTITUTE

Located within the **Paris-Saclay University** (12th Shanghai ranking), it is the **first French ecosystem in Data Sciences, AI and their societal impacts.**

## MISSION

To bring together **multidisciplinary expertise and boost the collective strength of its partners** in the Paris-Saclay cluster with the aim of combining big data and AI technologies with social sciences and humanities for an AI at the service of humans.

## IN FIGURES

**14** DATAIA members

**47** laboratories partners

**800** full-time researchers

**10** IA chairs out of 40 national

**30** IA theses

**450** PhD students per year

PAI
Programme d'Affiliation Industrielle

The Industrial Affiliation Plan (PAI) aims to boost the collective strength of the Institute's academic ecosystem and its industrial members. The services offered in response to the respective needs expressed include:

- Joint actions to support research;
- Sharing of experiences and collective needs;
- Facilitated access to recruitment;
- Access to training, seminars, workshops, etc.;
- Implementation of dedicated events (hackathons, challenges, etc.);
- Access to working places to increase exchanges.

D2C
DATAIA CLUB CONNECTION

The D2C system aims **upstream**, to present the priority research issues and to match them with the problems of industry. **Downstream**, to monitor contacts and opportunities for collaboration identified until they are set up and launched. It is part of the ambition to facilitate the establishment of several levels of collaboration and create a constructive dynamic:

1. Expertise / Student projects / Internships
2. Research collaborations / CIFRE theses
3. Joint laboratories / Joint teams
4. Multi-partner chairs

# OBJECTIVES & PROGRAM

The main objectives of this D2C are focusing on :

- **Improvement of digital models** for simulation and reduction of calculation times;
- **Reduction of 2D design mapping**;
- **Automation and proposal of complex 3Dmodels** in order to quickly explore innovative solutions;
- **Search for reverse engineering solutions** for the reconstruction of CAD files;
- **Enrichment of the digital chain**.

Some proposed applications are :

- **Generative functional dimensioning**;
- **Optimization of the positioning** of active parts and cables of a particle detector;
- **Simulation of mechanical integration** in connection with virtual reality;
- **Generative design assisted by AI**;
- **Testing of solutions** currently being developed by manufacturers and start-ups (LLM, DL, ML, etc.)

# DATAIA RESEARCHERS

## Functional rating test, link with virtual reality

**Pierre Manil** – Head of department
**Vincent Hennion** – Senior System Engineer
**Fernando Lomello** – Material & Process Engineer
**Fabrizio Rossi** – Head of Design Office
**François Nunio** – Senior Mechanical Engineer

## Test AI-assisted mechanical calculation and optimization solutions

**Julien Bettane** – Systems Engineer
**Mathieu Walter** – Systems Engineer
**Norbert Vouzeyllaud** – Systems Engineer

## Acceleration of simulations in solid mechanics by neural networks

**Anders Thorin** – Research Engineer

# PARTNERS & GUEST COMPANIES

SIEMENS

## Immersive 3D reconstruction, virtual reality and GenAI

**Olivier Riou** – Director Digital Experience Center

AMPERE

## Data analysis mechanical design part, generative functional dimensioning

**Fabrice Agnoli** – Big Data Project Manager

dessia

## Product design with genetic algorithms and 3D shape recognition

**Tanguy Loreau** – Data Scientist

DeepPhy

## Flow reconstruction viscosity and data simulation

**Yoann Cheny** – CEO

assystem

**Hélène Danlos**

SystemX
INSTITUT DE RECHERCHE TECHNOLOGIQUE

## Hybridation Simulation Apprentissage project: industrial use cases

**Mouadh Yagoubi** – Researcher/R&D Project Manager
**Faïcel Chamroukhi** – Researcher & R&D Project Manager

ALTAIR

**Caio Cesar Mafra Marques** – Technical Account Manager
**Sergio Esparza** – Technical Account Manager

# INSTITUTIONAL PARTNERS










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