

#Modeling  
#NumericalSimulation  
#Optimization

# LMI

« Laboratoire de mathématiques  
de l'INSA Rouen Normandie »

[lmi.insa-rouen.fr](http://lmi.insa-rouen.fr)

RESEARCH  
laboratory

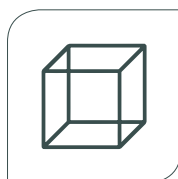


The Laboratory of Mathematics at INSA Rouen is a Research Ministry recognized research team [EA 3226]. It is integrated into the MIIS Doctoral School and the Normandy Interest Network «Normandie digitale». The LMI is also a member of the CNRS «Normandy Mathematics» Research Federation.

## Topics

- ✓ Approximation and numerical analysis, CAGD, data science
- ✓ Modeling, PDE, homogenization
- ✓ Optimization, optimal control, control theory, operational research
- ✓ Image processing: segmentation, registration, applications in medicine and geophysics
- ✓ Scientific computing, numerical simulation, HPC
- ✓ Probability and statistics

## Application sectors



3D in real time



Pollution Study



Energy



Medical and  
geophysical  
imaging



Eco-mobility

Staff over

30

From

1987



FR CNRS 3335



# Expertise

The wide variety of research themes of LMI members enables it to cover many fields of investigation, the common link being a rigorous modeling of the studied phenomena before deepening their potentialities. Part of our work is done in partnership with the industry. Six main themes of research are thus studied within the laboratory:

- ✓ **Real time 3D**  
from 3D sculpture to 3D printing, or surface offset modeling.
- ✓ **Energy**  
wind field and ocean current simulation, wind turbine fiability, cloud tracking for solar energy.
- ✓ **EDP, modeling and numerical simulation**
- ✓ **Air pollution study**  
using statistical methods.
- ✓ **Medical and geophysical imaging**  
segmentation, noise removal, registration, movement tracking...
- ✓ **Eco-mobility**  
road traffic modeling, optimization of logistic flows.
- 🔗 **Multiple collaborations**  
The LMI collaborates with the regional computing center (CRIANN), with the industry and many organisms: Dassault Systèmes, Air Normand, IFPEN, TEB Prynél, INRIA, Total, Météo France, Engie - La Compagnie du Vent, ADWEN, Cerema, CESI, INRIA, CNRS...

# Projects

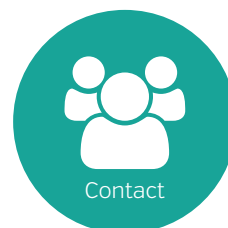
The human size and dynamism of the LMI allow it to collaborate on significant projects, in connection with the industry and businesses. As shown by :

- success story on wind turbine energy: from PEPS of Labex AMIES to the M2NUM project of the Région Normandie and Europe including partners like ENGIE - LCV, ADWEN and many academic laboratories...
- many major international collaborations: CSC with China, Ecos Nord with Mexico...
- strong international relations like the United States, Great Britain, Tunisia, Morocco, Poland, Cuba, Italy, Russia, Poland and Vietnam...
- collaborative projects like M2NUM project in connection with energy, imaging sciences and eco-mobility, XTERM on complex systems, CLASSE2 on port aspects and logistics, ANR Fractal Grids...
- projects supported by Region Normandy (linked to the Normandy Networks of Interests «Normandie Digitale» and «Continuum Terre-Mer») as Monomad in imaging sciences and Teledetact with CEREMA on the study of Norman cliffs, LMI is strongly involved in major axes with industry and society.

## Keep in mind

INSA Rouen Normandie is the first public engineering technical university of Normandy. The 10 different engineer education tracks, the 7 masters in research and the 2 masters in applied sciences are deeply connected to its 8 research laboratories.

**INSA Rouen Normandie provides three education tracks directly connected to the LMI lab: engineer in mathematics, master in data science, master in mathematics and applications.**



Contact

## Laboratoire LMI

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