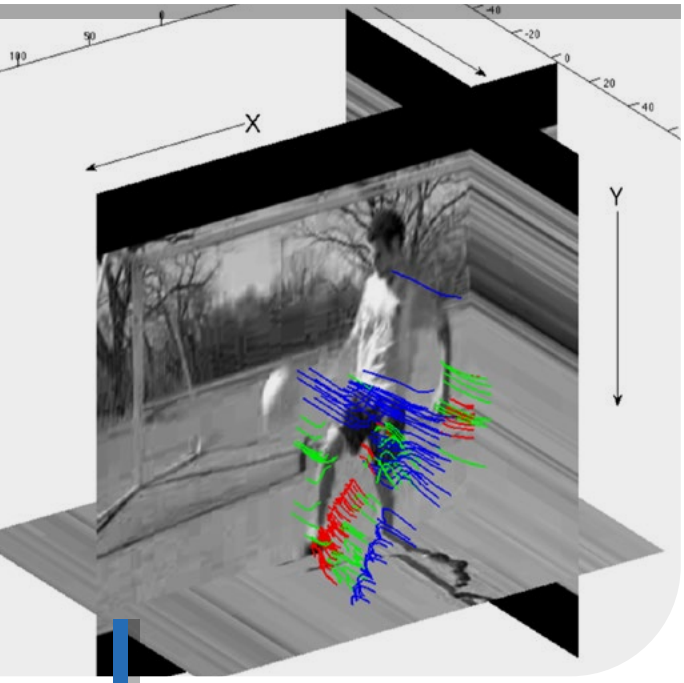
La Rochelle Université

MATHEMATIQUES IMAGE APPLICATIONS
UNIVERSITÉ DE LA ROCHELLE

Applied mathematic / Computer vision / Deep learning / Partial differential equations / Applied geometry

Mathématiques, Image et Applications (MIA)



The scientific activity of the MIA focuses both on theoretical issues that are classic for a mathematics lab and on issues arising from major societal challenges.

The two fields of excellence of the laboratory, image, video and data processing and analysis, and modeling of the environment on a human scale, originally and closely combine its multi-disciplinary skills.

Director — **Catherine Choquet**

Permanent research staff — **15**

Phd students — **10**

Staff on research project — **3**

Disciplines — Mathematics . Computer Science . Signal processing

Societal challenges

Applied mathematics

Greater global awareness of mathematical sciences are vital to addressing challenges in areas such as artificial intelligence, climate change, energy and sustainable development, and to improving the quality of life in both the developed and the developing worlds. (UNESCO's November 2019 resolution 30).

Environment

Development of predictive solutions in hydraulogy: control of water ressources, pollution, salinization.

Medical diagnosis, health

Medical imaging, assisted diagnosis, epidemiological modeling.

Security

Video analysis and video surveillance, marine radar imaging.

Behaviour analysis

Gesture analysis for sports performance.

Mathématiques, Image et Applications (MIA)

Research Network

The MIA laboratory participates in the LABEX AMIES, which aims to strengthen the visibility of the mathematical community in the socio-economic world and to make SMEs aware of the potential of mathematics for innovation. The MIA is a member of two CNRS research federations, MIRES: Mathematics and its Interactions, Images and Digital Information, Networks and Security and MARGAUx: which federates all the mathematical research activities carried out in the Nouvelle-Aquitaine region.

The laboratory is also involved in several CNRS research groups such as ISIS, HydroGEM and MathSAV and in several regional research networks (R3). Finally, within the framework of these activities, the MIA contributes its skills to the La Rochelle Territory Zero Carbon project (LRTZC).

Expertise Achievements

Among the many achievements of the MIA, it is worth noting the creation of a target detection algorithm in maritime radar images, the construction of a device and software to assist in the diagnosis of circulatory disorders, and the creation of a simulation software for geo-hydrology.

The MIA's work has also resulted in a world first: an algorithm for real-time 3D segmentation of cancerous tumours in high frequency ultrasound images.

Training

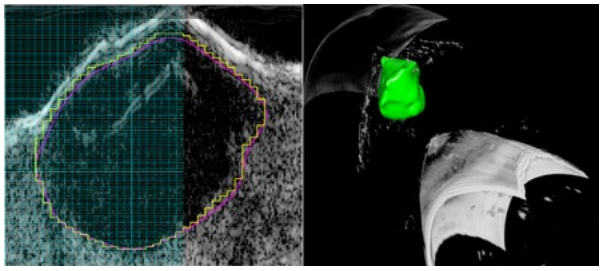
MASTER MATHEMATICS AND APPLICATIONS

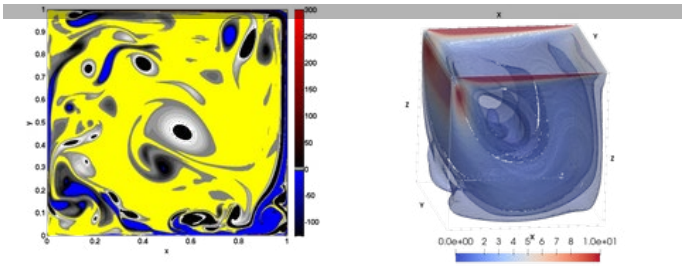
- **programme Mathematics and interactions, MIX**

Partnerships Collaborations

The MIA collaborates with numerous social, economic, institutional and academic actors.

Its partners include hospitals (Centre hospitalier de La Rochelle, Hospices de Lyon, Hospitals of Geneva), IT groups (ATOS BULL, BOWEN), companies (HUAWEI), start-ups (IKOMIA, DICARTECH) but also organisations such as the World Bank, the European Council, the CNRS or the Defence Innovation Agency of the DGA.





CONTACT

Mathématiques Image et Applications

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