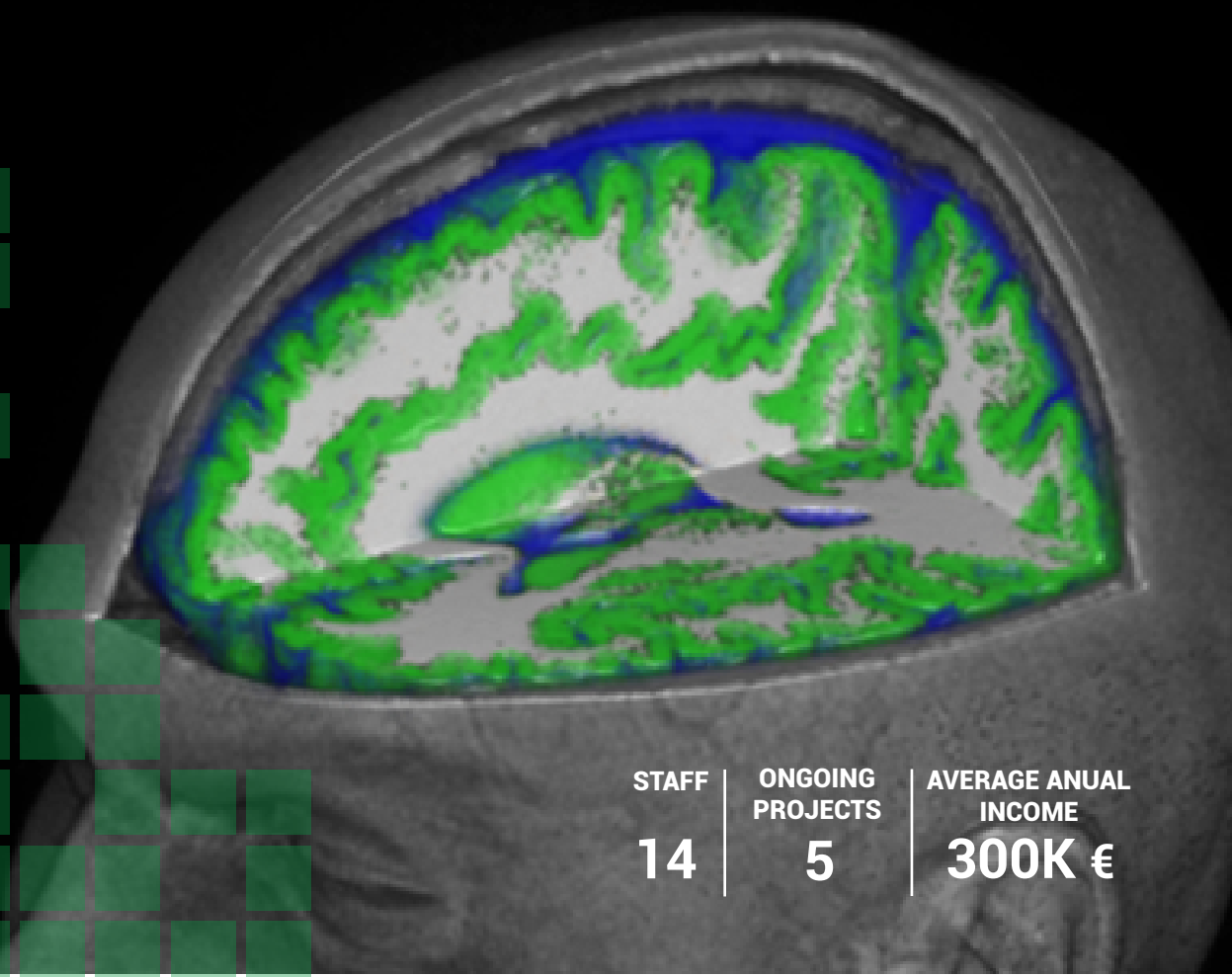
Universitat de Girona

MEDICAL IMAGING LAB

INSTITUT DE RECERCA EN VISIÓ PER COMPUTADOR I ROBÒTICA



STAFF	ONGOING PROJECTS	AVERAGE ANUAL INCOME
14	5	300K €

MEDICAL IMAGING

The Image Analysis Lab is committed to developing and **optimising computerised methods** to improve patient outcome through innovations in **medical imaging.** Researchers at this lab are developing new approaches to the exploration, analysis, and quantitative assessment of diagnostic images based on cutting edge techniques in image **segmentation and registration, pattern recognition, and artificial intelligence.** The final aim is the implementation of **new computer-aided tools** for different diseases to help on the diagnosis, follow-up, and monitoring of patients' therapies.

RESEARCH LINES

IMAGE PREPROCESSING TECHNIQUES, FEATURE EXTRACTION, IMAGE SEGMENTATION, AND IMAGE DETECTION AND RECOGNITION.

REGISTRATION AND FUSION OF INFORMATION FROM DIFFERENT MEDICAL IMAGING MODALITIES.

DEVELOPMENT OF COMPUTERISED TOOLS TO AID DIAGNOSIS THROUGH IMAGE ANALYSIS.

MEDICAL APPLICATIONS

Breast cancer

X-ray, Ultrasound, Magnetic Resonance Imaging

The breast imaging projects develop and evaluate novel imaging tools that can be integrated into the screening workflow to steer and optimise image acquisition and guide the selection of appropriate personalised screening protocols. Those tools process imaging data in an intelligent way to minimise interpretation time and are based on breast density estimation algorithms and automated breast cancer detection algorithms applied to DBT, ABUS and MRI.

Ongoing projects:
SMARTER
SCARtool

Brain analysis

Magnetic Resonance Imaging

Recent studies have shown that Magnetic Resonance Imaging (MRI) parameters might be helpful to predict the clinical evolution of multiple sclerosis (MS), both in terms of natural history as well as in terms of response to therapy. Such parameters include the presence of new lesions as well as brain volume loss on follow-up MRI scans. Our research aims to develop, validate and implement in clinical practice fully automated and robust tools to measure new lesions and brain volume changes in patients with multiple sclerosis (MS).

Ongoing Projects:
BiomarkEM.cat
NICOLE

Prostate cancer

Ultrasound, Magnetic Resonance Imaging

VICOROB focuses the research on two different aspects of the disease: early diagnosis using MRI multiparametric information based on machine learning and information fusion; and the development of tools for the guidance of the biopsy based on the non-rigid correspondence of ultrasound and MRI images of the same patient. This correspondence involves the development of robust segmentation algorithms for prostate delineation for ultrasound and MRI and the development of non-rigid registration multi-modal methods.

MAIA

Erasmus+

Master Erasmus Mundus in Medical Imaging and Applications http://maiamaster.org

The objective of the Erasmus+ Joint Master Degree in Medical Imaging and Applications (MAIA) is the application of informatics research areas in the specification, design, development, and deployment of computerised systems for the acquisition, analysis, and interpretation of medical images, with the aim of achieving a more efficient diagnosis and treatment in particular diseases. The master responds to the new advances in computer aided diagnosis (CAD) systems, which in close development with novel imaging techniques, have revolutionised healthcare in recent years.

OUR PARTNERS

Hospital Universitari de Girona Doctor Josep Trueta · Vall d'Hebron Hospital · Clínica Girona · SIMULATION · Cemcat Centre d'Esclerosi Múltiple de Catalunya · UB · Manchester Metropolitan University · dIBGi · UMC St Radboud · Prifysgol Aberystwyth University · MeVis · IAS Institut d'Assistència Sanitària · UDIAT Centre Diagnòstic · volparasolutions · Universiti Teknologi Petronas · biomedia · mediri medical imaging research institute · Fraunhofer · Clínic Barcelona Hospital Universitari · University of Dundee

VICOROB - Campus Montilivi, Edifici P4 - 17071 Girona -Tel. +34 972 41 89 05- vicorob@eia.udg.edu - http://vicorob.udg.edu
twitter: https://twitter.com/vicorob - facebook: https://www.facebook.com/ViCOROB