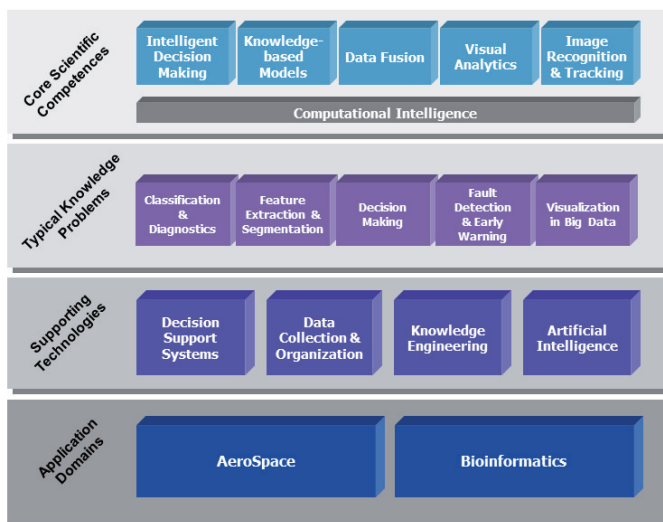


The Computational Intelligence Research Group (CA3) was formed in 1996 and in 2000 it was integrated in the Centre of Technologies and Systems (CTS) of Uninova.

The CA3 group joins together researchers with interests in the areas of Computational Intelligence, Intelligent Decision Systems and Intelligent Image Processing. Our focus is on **applied research**, defining new concepts methods and algorithms capable of solving real-world problems.

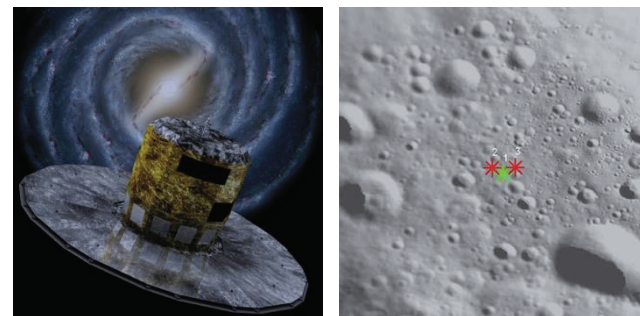
Our application projects are focused on: *AeroSpace, Bioinformatics and Environment.*



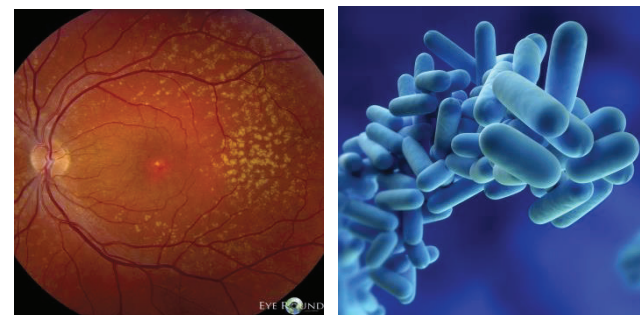
Main research topics:

- Intelligent Decision Making
- Knowledge-based Models
- Data Fusion
- Visual Analytics
- Image Recognition and Tracking

Exploring and Understanding Space



Researching and Improving Health



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Computational Intelligence in AeroSpace & Bioinformatics

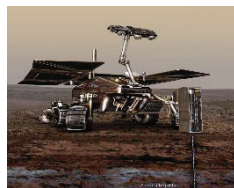
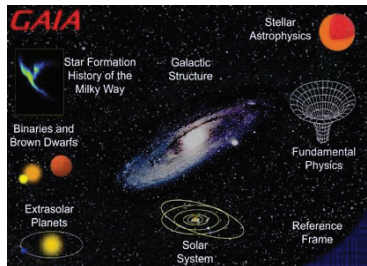
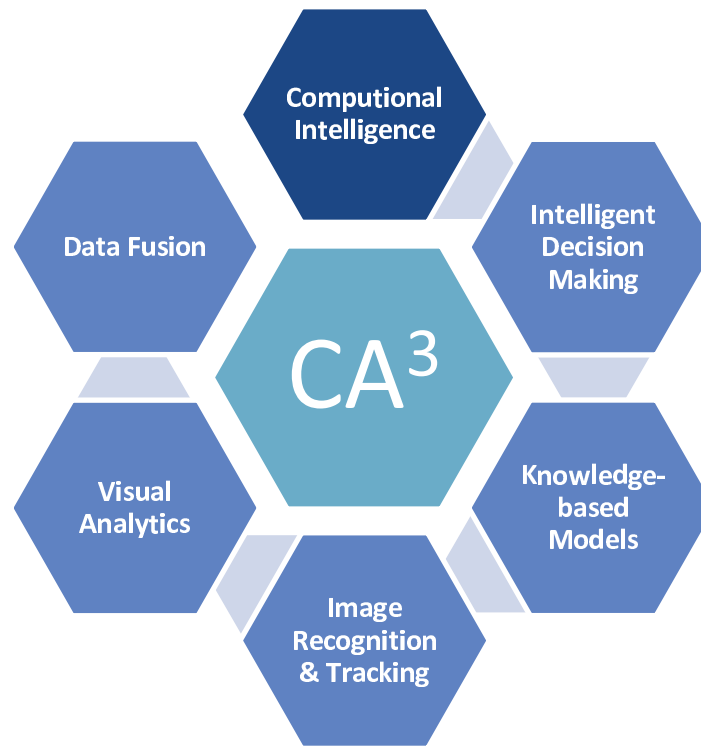
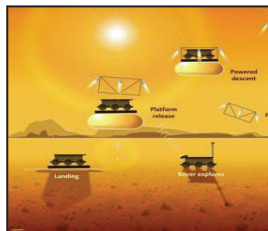
www.ca3-uninova.org

AeroSpace

- Innovative monitoring and early warning (Envisat gyros, Exomars drill, Space link Monitor)
- Intelligent Decision support systems - Dynamic algorithm for planetary landing of Spacecraft (Mars and Moon).
- Visualization of big data and Intelligent image processing (GAIA, Moon SMART-I Atlas, Solar feature tracking)

Relevant Projects (20 approved by ESA):

- IVELA – Navigation, selection and exploration of high quality aesthetically and rigorous visualization of massive scientific data
- IPSIS - Intelligent site selection for planetary landing of spacecraft with hazard avoidance.
- MODI – Fault detection of drill device for the ExoMars Rover and Mars terrain hardness recognition.

A screenshot of a software interface showing a grid of data points, likely representing a landing site analysis or mission planning tool.

We focus on applied research and prototype development

More of our projects at: www.ca3-uninova.org

Bioinformatics

- Image processing algorithms for biomedical image analysis
- Biomarkers evaluation using Image segmentation and feature extraction
- Time series image analysis, including image registration
- Multi-modal image analysis
- Medical data analysis and decision making
- Expertise on retinal and microscopy image analysis

Relevant Projects:

- DRUSAS – Advanced image processing for automatic drusen quantification on retinal images
- SADAC - study the kinetics of eColi cell division and its correlation to functional aging, from multi-modal in-vivo microscopy images

