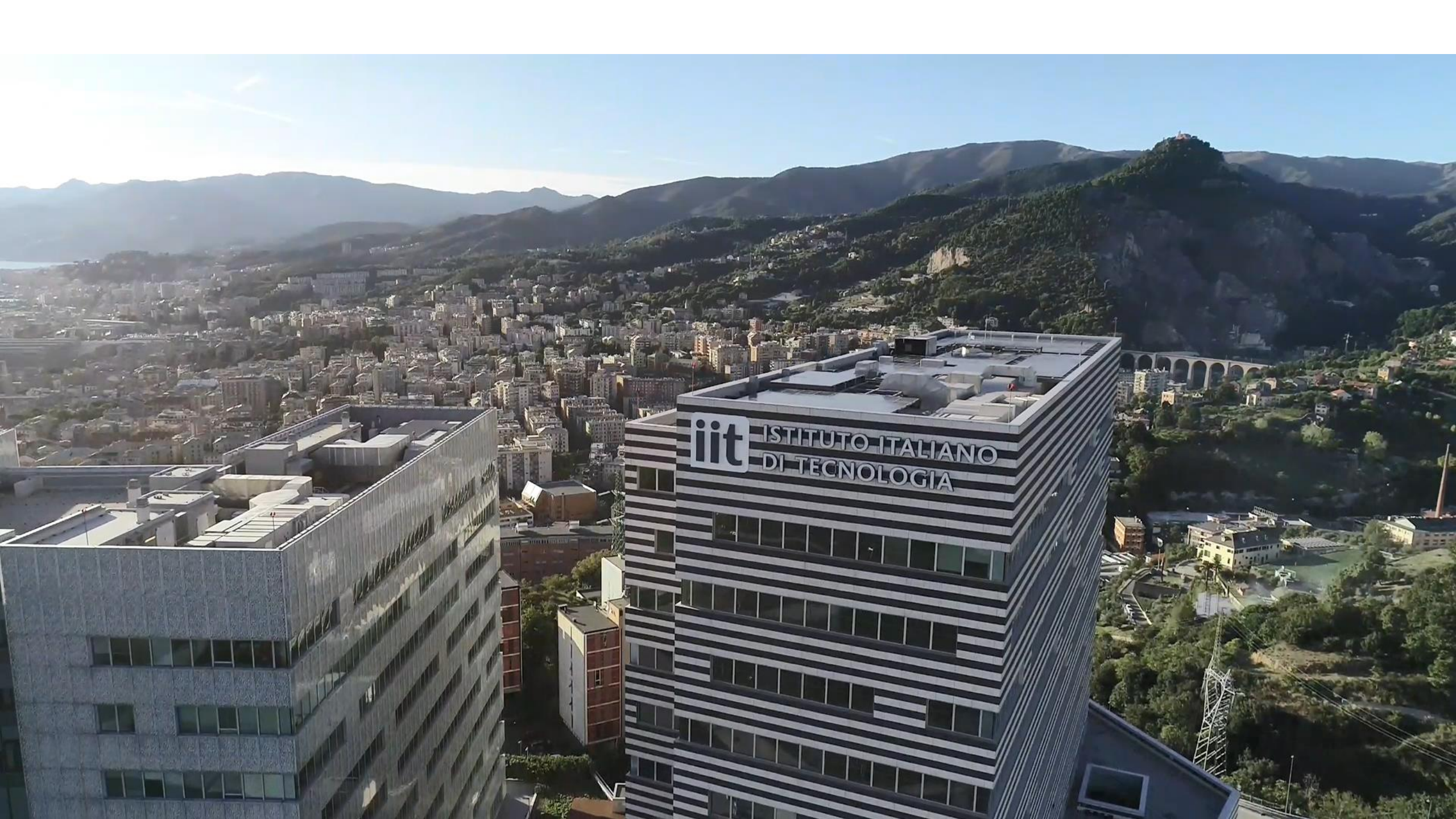


Intelligenza Artificiale per spazi resilienti: monitoraggio automatico del distanziamento sociale

Alessio Del Bue
Senior Researcher
Istituto Italiano di Tecnologia



IIT's Centers



Center for Neuroscience e Cognitive Science,
Università di Trento, TRENTO



Center for Genomic Science,
Campus IFOM-IEO, MILANO



Center for Nano Science and Technology,
Politecnico di Milano, MILANO



Center for Sustainable Future Technologies,
Politecnico di Torino, TORINO



Center for Translational Neurophysiology,
Università di Ferrara, FERRARA



Center for Microbiorobotics,
Scuola Superiore Sant'Anna, PISA



Center for Nanotechnology Innovation,
Scuola Normale Superiore, PISA



Center for Life Nanoscience,
Università degli Studi di Roma La Sapienza,
ROMA



Center for Advanced Biomaterials for Health
Care,
Università Federico II di Napoli, NAPOLI



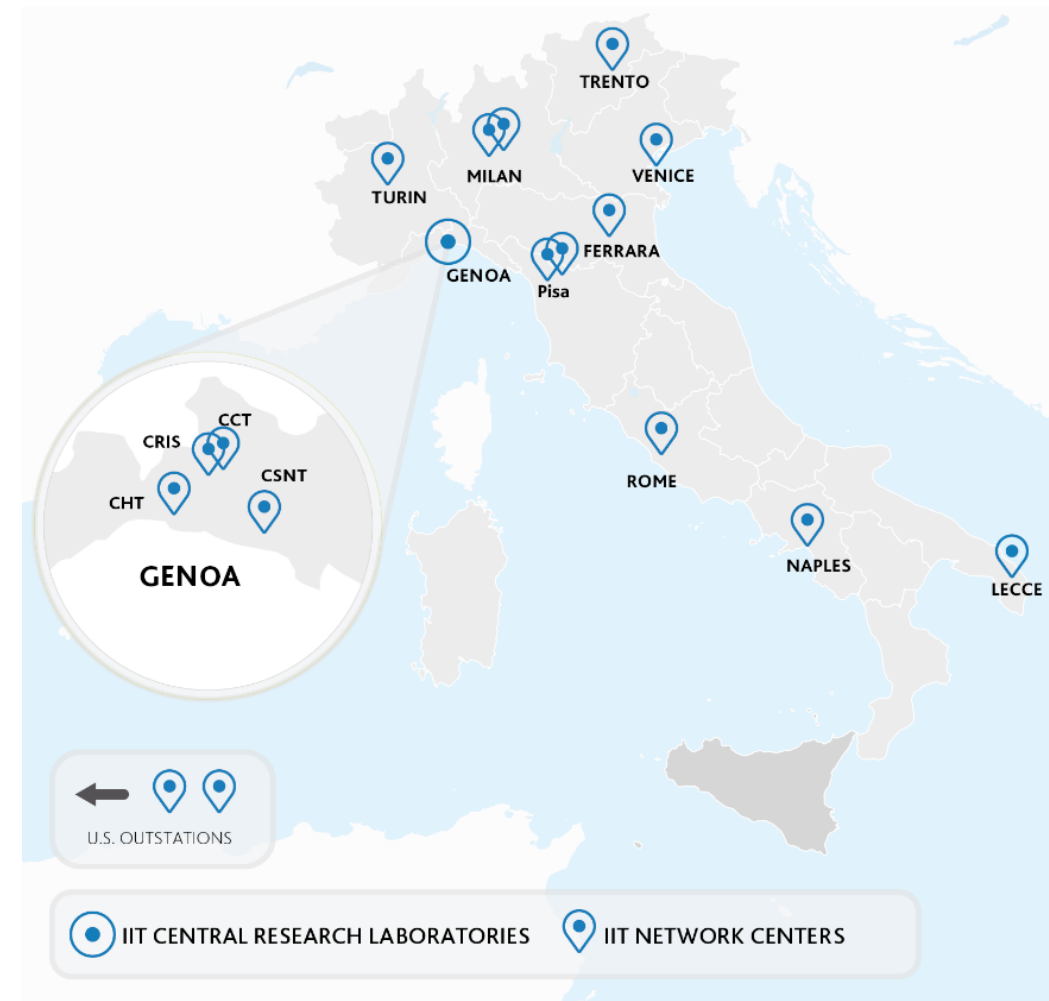
Center for Biomolecular Nanotechnologies,
Università del Salento, LECCE



Center for Cultural Heritage Technology,
Università Ca' Foscari, VENEZIA

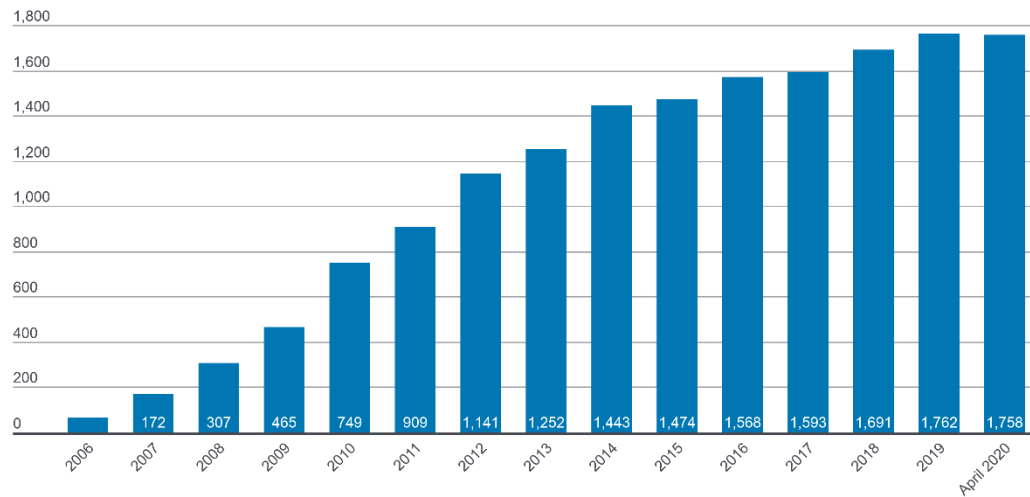


Central Research Laboratories, GENOVA



Staff

ANNUAL GROWTH



More than **1700** people

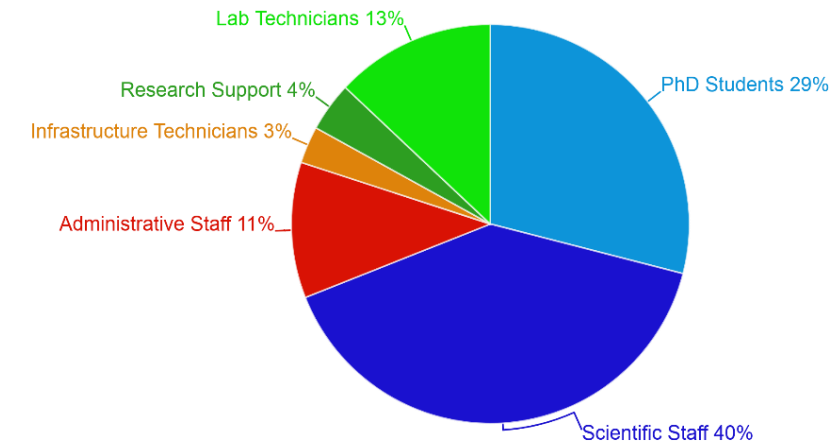
Average age **35 years**

Scientific + Technical Staff + Ph.D. Students > **80%**

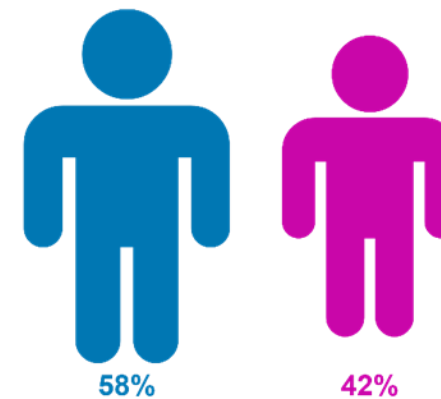
49 Tenure Track and Tenured positions

Overall staff from more than **60** countries

BY AREA (% of the headcount)

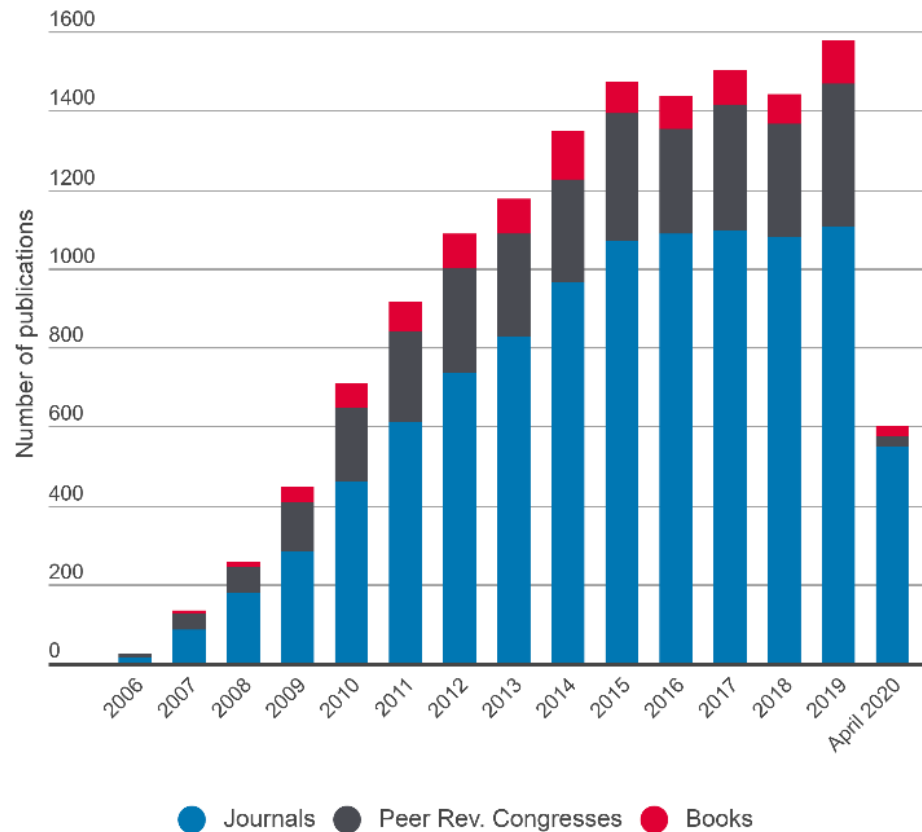


GENDER RATIO

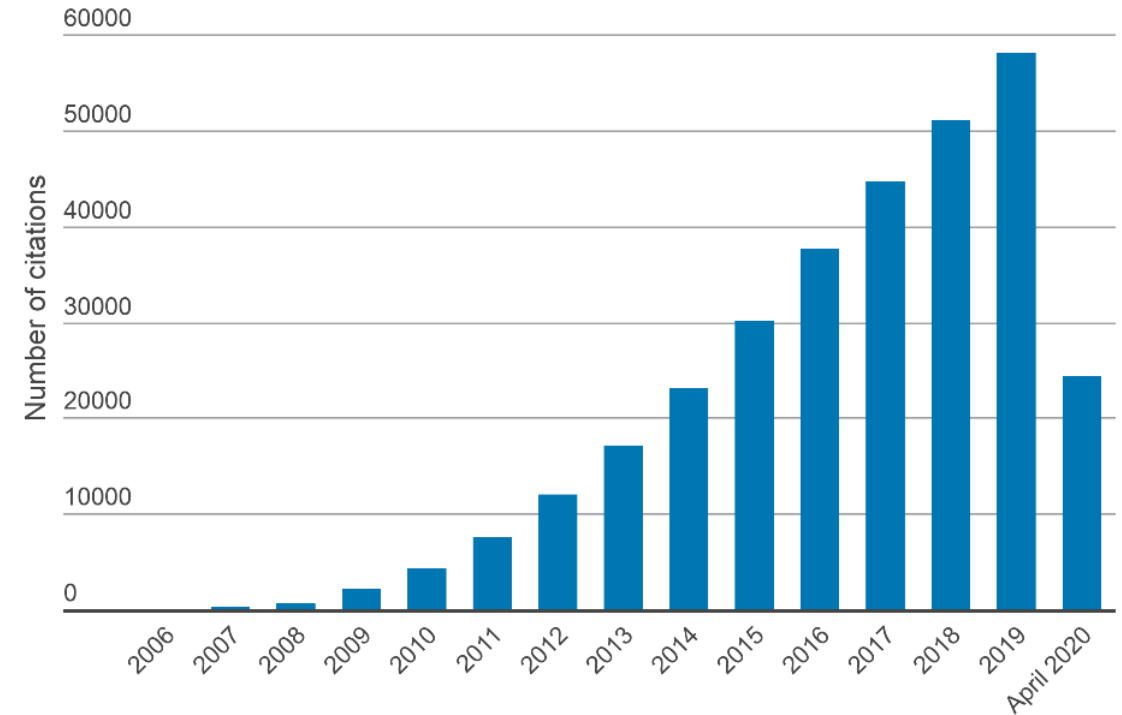


Citations and publications

Publications since 2006 > 14.000



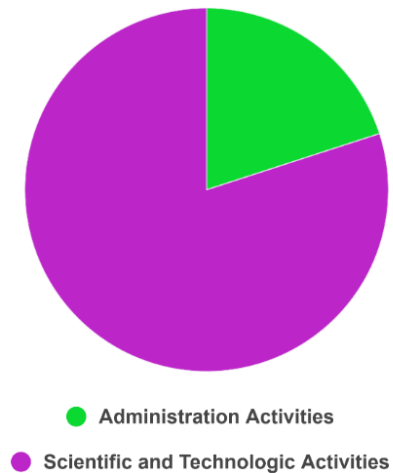
Citations per years (Scopus – Elsevier B.V.)



Fund Raising

PUBLIC FINANCIAL RESOURCES*

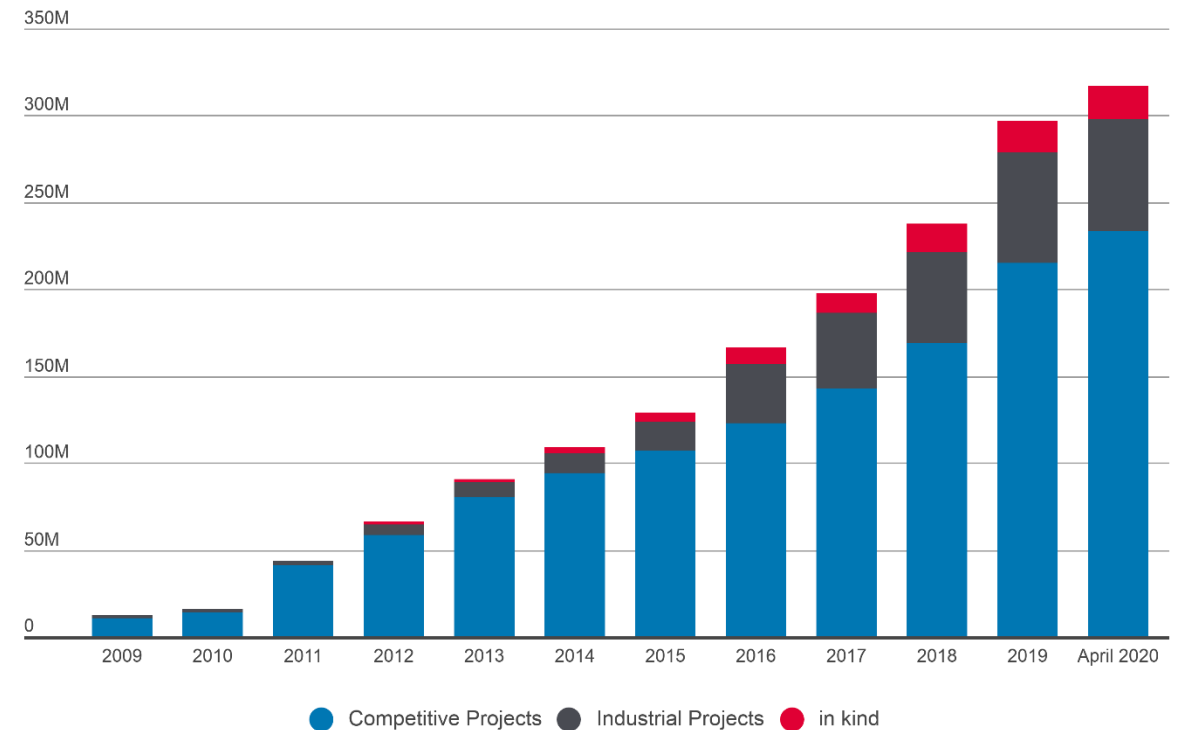
In 2018 public financing received through the Italian Ministry of Economy and Finance amounted to approximately 91,5 M€ (deducted spending review amount). Approximately 80% of the funding was allocated to scientific and technological activities.



INDEPENDENT FINANCIAL RESOURCES

Since 2006 independent financial resources from fund-raising activities have amounted to approximately **317 M€** broken down as follows:

- Competitive Projects (233 M€)
- Commercial Projects (65 M€)
- In-kind (19 M€)



Start-ups

23 Start-ups launched,
40+ Start-up Projects & Business Ideas

 **COESIS**

hiq-nano
THE ART OF PRODUCING
NANOPARTICLES

 **movendo**
technology
enabling people


Organic
Bioelectronics

POLIPO

SMO
SMART MICRO OPTICS

 **ADVANCED**
MICROTURBINES

PIEZOSKIN

qbrobotics

 **optogenix**

B I K I
TECHNOLOGIES
DESIGNING BETTER MEDICINES

 **FLEET**
TECHNOLOGIES

 **ribes.tech**

 **morecognition**
enabling human muscles

 **CIRCLE**
GARAGE

 **Genoa**
Instruments

 **BEDIMENSIONAL**

 **KYME**

POLITRONICA
for Digital Printing & Manufacturing 

Joint Labs

IIT has started several Joint Laboratories with major international companies and R&D entities. In these laboratories a scientific and technological road map is developed jointly by IIT scientists and the R&D staff of the partner institutions.



IIT Center for Human Technologies (CHT)



12th floor Admin & Facilities

11th floor Start up Incubator

10th floor Nanoscopy

9th floor Genomic & Biochemistry

8th floor Computational Sciences

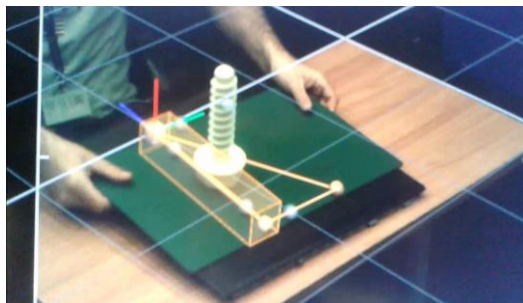
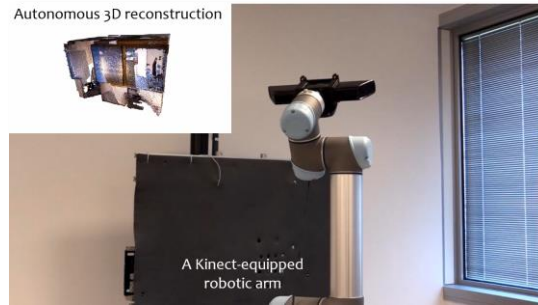
7th floor Cognitive Neuroscience & robotics



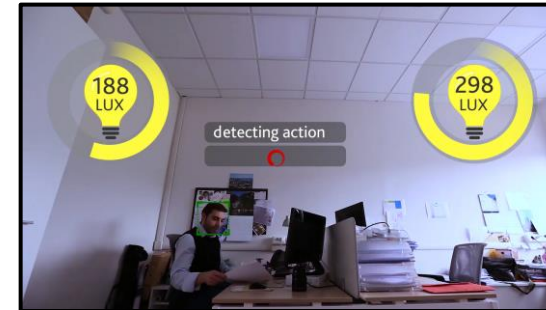
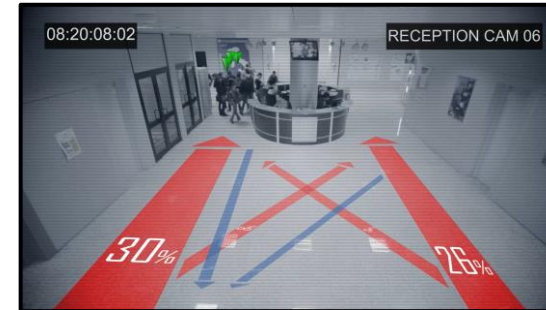
We are recently part of the ellis network (**European Laboratory for Learning and Intelligent Systems**, <https://ellis.eu>) with the Genoa unit, a joint effort of IIT & UniGe to promote excellence in AI research in Italy and Europe.

Artificial Intelligence – Two Souls

Spatial AI



Social AI

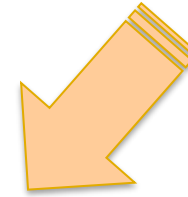


Two souls, one aim

Spatial AI: perceive and understand the real physical world



Social AI: understand and forecast the behavior of humans



Develop an **AI infrastructure** that understand our physical space and the human, **creating an intelligent system** that can function and assist users in the real word.

AI platform – short and long term plan

Sensor network for **Spatial** and **Social** AI

8th floor
@ Erzelli

- | | |
|--|--|
|  Multicamera Axis (PoE) |  RGBD (PoE + 220v) |
|  Single Camera AXIS (PoE) |  360 Camera (PoE) |
| |  Thermal Camera (PoE) |



- Playground for AI methods in a dynamic scenario
- A tool to collect data, incrementally, long-life
- Growing Github repository managed by technicians



The embodiment is a “*Visual Alexa*”:
An assistive visual question answering machine that surpasses specific Turing test related to the spatial arrangement of things, the function of objects/places and what people are doing.



AI for Social Distancing

Social Distance monitoring in
work environments
public spaces
retail shops

- *Privacy-by-design* -
- *AI based* -
- *Plug & play* -

Pipeline

Acquiring video stream
from the **already existing**
camera network

Subject anonymization

Scene geometry estimation

Personal safety area calculation



Pipeline

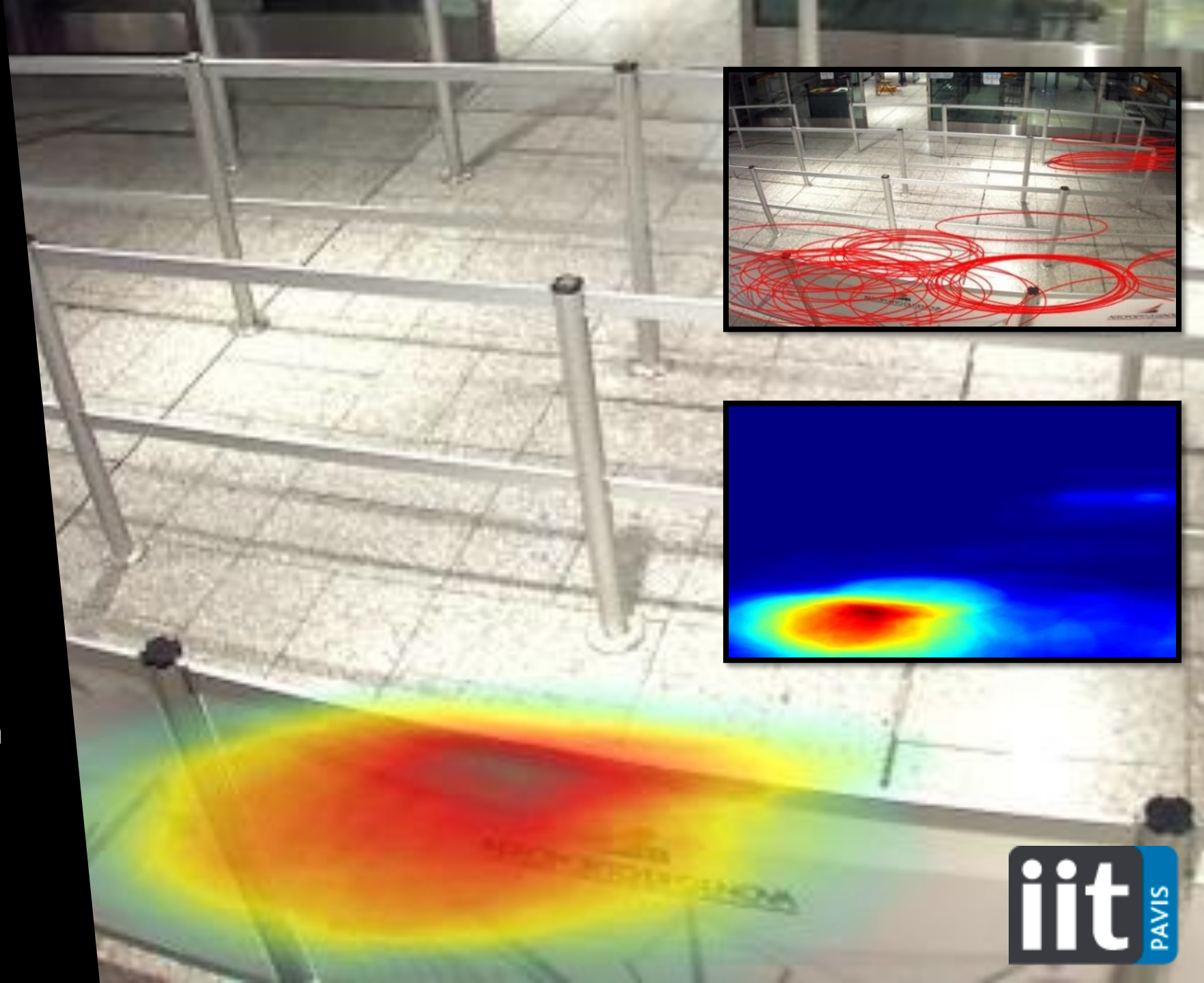
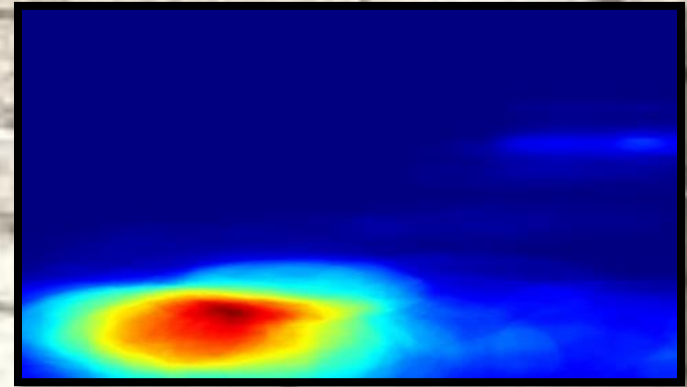
Acquiring video stream
from the **already existing**
camera network

Subject anonymization

Scene geometry estimation

Personal safety area calculation

Statistics generation & alarms



Case Studies

Airport

Ongoing collaboration with
Aeroporto di Genova

System testing activities started
in April

Prototypical system deliverable
planned for June 1st



Contact us

Alessio Del Bue

