Institute of Information Science and Technologies “A. Faedo”
Italian National Research Council (CNR-ISTI)

Director: Dr. Roberto Scopigno, roberto.scopigno@isti.cnr.it

Mission and activity of the Institute

CNR-ISTI is the largest CNR institute for Computer Science, with a staff of around 220 employees. ISTI is committed to produce scientific excellence and to play an active role in technology transfer. The domain of competence covers Computer Science & Technologies and a wide range of applications. The activity aims at increasing knowledge, developing and testing new ideas and widening the application areas. ISTI is actively involved in collaborations with the academic world and in cooperative research and development programs, both national and international. In addition, ISTI is strongly involved in teaching activities, at bachelor, masters and PhD levels, contributing with a variety of training initiatives in cooperation with national and international universities. The Institute also has a very solid expertise and reputation in the design and deployment of e-infrastructures and in technology transfer activities oriented towards industry or the public administration.

Most of the research activity of the Institute is developed in the context of the Engineering, ICT, Energy and Transport Technologies Department (DIITET) of CNR, some of the research activity is also developed in the framework of other CNR thematic departments, such as Human and Social Sciences-Cultural Heritage, Physical Sciences and Matter Technologies, Biomedical Sciences.

The scientific activity is organized into 6 thematic areas and 12 research laboratories, each having a wide scientific and administrative autonomy. These thematic areas, the research labs and the main research topics are reported below.

Check our newsletter ISTI News at https://www.isti.cnr.it/news.php for updates on our recent activities
**Thematic Area: Networking**

Research Lab:

**Wireless Networks (WN), Head: Paolo Barsocchi, [http://wnlab.isti.cnr.it](http://wnlab.isti.cnr.it)**

**Keywords:**
- Activity Recognition
- Ambient Assisted Living (AAL)
- Ambient Intelligence, Smart Spaces and Green Buildings
- Architectures, Protocols, and Technologies for Pervasive Communications
- Cyber-physical Systems of Systems
- Communication Middleware for Context-awareness
- Domotics and Home Automation
- Indoor Localization
- Mobile Social Computing
- Opportunistic Networking and Sensing
- Positioning and Tracking Technologies
- Smart Devices and Smart Spaces
- Social Models for Pervasive Systems
- Software Defined Networks
- Wireless Communications and Multimedia

**Thematic Area: Software**

Research Labs:

**Formal Methods and Tools (FMT), Head: Maurice ter Beek, [http://fmt.isti.cnr.it](http://fmt.isti.cnr.it)**

**Software Engineering and Dependable Computing (SEDC), Head: Felicita Di Giandomenico, [http://labsedc.isti.cnr.it](http://labsedc.isti.cnr.it)**

**System and Software Evaluation Center (SSE), Head: Giuseppe Lami, [http://ssec.isti.cnr.it](http://ssec.isti.cnr.it)**

**Keywords:**
- Analysis of Resilience and Energy Consumption in Critical Infrastructures
- Analysis, Testing and Monitoring of Dynamic Systems
- Cobot Protocol Validation
- Dependability Assessment and Fault-tolerant Solutions
- Empirical Software Engineering
- Formal Approaches to Medical Image Analysis
- Formal Approaches to Software Product Line Engineering
- Formal Modelling and Verification of Service-Oriented Systems
- Formal Modelling and Verification of Spatially Distributed Systems
- Functional Safety of automotive software-based systems
- Human Factors in Software Engineering
- Model-based E-Learning Systems
- Modeling and analysis of Railway Control Systems
- Quantitative Formal Methods for Collective Adaptive Systems
- Models and Methods for Software Product Evaluation and Measurement
- Requirements Engineering
- Scalable Testing
- Software Certification
- Software Process Assessment and Improvement in Automotive
- Testing for Security and Privacy
- Testing of Systems-of-Systems
- Verification Tools and Techniques
**Thematic Area: Knowledge**

![Image of Knowledge Lab]

**Research Labs:**

**Human Interfaces in Information Systems** (HIIS), Head: Fabio Paternò,  [http://hiis.isti.cnr.it](http://hiis.isti.cnr.it)

**Knowledge Discovery and Data Mining** (KDD), Head: Fosca Giannotti,  [https://kdd.isti.cnr.it/](https://kdd.isti.cnr.it/)

**Networked Multimedia Information Systems** (NeMIS), Head: Donatella Castelli,  [http://nemis.isti.cnr.it](http://nemis.isti.cnr.it)

**Keywords:**

- Accessibility and Assistive Technology
- Artificial Intelligence and Deep Learning
- Big Data Analytics, Platforms, Applications
- Digital Libraries: Foundations and Systems
- Digital Restoration of Ancient Documents
- End User Development
- Ethics-sensitive and Privacy-aware Data Mining
- Explainable AI
- Face Recognition and Verification
- Human-Robot Interaction
- Intelligent Information Systems
- Mobility and Network Analytics
- Multimedia Content Understanding and Information Retrieval
- Open Science & FAIR Data Management
- Personalization of IoT Ecosystems
- Research Data Infrastructures, Virtual Research Environments
- Scholarly Communication Models, Methods and Tools
- Scientific Data Integration and Management
- Semantic Web: Reasoning, Learning and Uncertainty
- Social Sensing & Analytics
- Text Mining, Classification, NLP & Transfer Learning
- User Interfaces: Context-dependent, Emotion-based, Multimodal

**Thematic Area: High Performance Computing**

![Image of HPC Lab]

**Research Lab:**

**High Performance Computing** (HPC), Head: Raffaele Perego,  [http://hpc.isti.cnr.it](http://hpc.isti.cnr.it)

**Keywords:**

- AI and Data Mining for Ranking, Prediction, Recommendation
- Information Systems for Big Data: Indexing, Compression, Efficiency and Responsiveness
- Scalable Distributed Computing for Big Data Processing and Analysis
- Data-driven Analytics in Distributed Edge-Cloud Systems
- Cloud Computing, Cloud Federations, and Cloud Resource Management
- Mobility Data Analysis and Semantic Enrichment
- Knowledge Bases and Entity Linking
- Social Media Analysis
Thematic Area: Visual

Research Labs:
Signals and Images (SI), Head: Davide Moroni, [http://si.isti.cnr.it](http://si.isti.cnr.it)
Visual Computing (VC), Head: Paolo Cignoni, [http://vcg.isti.cnr.it](http://vcg.isti.cnr.it)

Keywords:
- 3D Acquisition of Shape and Appearance
- Remote Sensing and Earth Observation
- Real Time Imaging and Embedded Systems
- Image Processing and Computer Vision
- Medical Imaging
- Artificial Intelligence & Intelligent Vision Systems
- Geometry Processing and 3D Shape Analysis
- Architectural Geometry
- Interactive 3D Graphics
- Topological Data Analysis
- Scientific and Large Data Visualization
- Web-based Visualization and Mobile Platforms
- Virtual and Augmented Reality
- Computational Biology and Physiology
- Computational Fabrication
- Visual Computing for Cultural Heritage
- Assistive Technologies and Smart Living Environments

Thematic Area: Flight and Structural Mechanics

Research Labs:
Mechanics of Materials and Structures (MMS), Head: Cristina Padovani, [http://www.nosaitaca.it/](http://www.nosaitaca.it/)
Space Flight Dynamics (SFD), Head: Luciano Anselmo, [https://www.isti.cnr.it/research/unit.php?unit=SFD](https://www.isti.cnr.it/research/unit.php?unit=SFD)

Keywords:
- Computational Solid Mechanics
- Dynamic Identification
- Mechanics of Masonry Structures
- Model Updating
- Orbital Analysis
- Satellite Re-Entry Predictions
- Space Debris
- Structural Health Monitoring
**Training and technology transfer**

In recognition of the importance of training in today’s Information Society, ISTI pays great attention to involving doctoral students and post-doctoral fellows in research activities and participates actively in the doctoral programs of the University of Pisa and other partner universities.

ISTI is also deeply involved in technology transfer activities (within several contracts with companies and institutions). Many results of our scientific projects have produced software systems and tools, many of them have been released to the community as open source resources.

**Funding**

ISTI receives from CNR funds to cover the expenses of all permanent staff. All other costs (nonpermanent staff, equipment, travel, etc.) are covered by funds secured by ISTI on competitive research calls, at the National and European level. ISTI has an average of 100 active projects, with an average annual funding of 5ME.

**ISTI ICT Library**

Founded in 1954, ISTI Library is one of the oldest ICT Libraries in Europe and among the most complete Italian libraries in the field. It gives access to both local (over 27,000 books and 2,000 serials) and remote resources. Our library supports Open Science through the provision of services and the promotion of actions regarding Open Access and Open Data. For more information: [https://library.isti.cnr.it/](https://library.isti.cnr.it/)

**ISTI and ERCIM**

The European Research Consortium for Informatics and Mathematics (ERCIM) aims to foster and facilitate scientific collaboration within the European research community and to stimulate and increase cooperation with European industry. CNR has been a member of ERCIM since 1988. ISTI currently has representatives in the Executive Committee and in the Editorial Board of the quarterly magazine ERCIM News. Visit [https://www.ercim.eu/](https://www.ercim.eu/) for additional information.

ISTI regularly hosts foreign postdoctoral researchers through ERCIM’s fellowship programme.

**Historical notes**

The Institute of Information Science and Technologies (ISTI) is part of the Italian National Research Council (CNR). It is located in the CNR Research Campus in Pisa. ISTI was constituted in September 2000 as a result of a merger between the Istituto CNUCE (CNUCE-CNR) and the Istituto di Elaborazione dell’Informazione (IEI-CNR). ISTI is named in honor of Alessandro Faedo, former Rector of the University of Pisa and former President of CNR, in recognition of his important contribution to the advancement of Information Science and Technologies in the Italian academic communities.