School of Computer Science – La Plata
The School of Computer Science was created in 1999

Currently there are 2800 active undergraduate students. Each year there are 1000 new undergraduate students. Also 1500 active students in graduate careers.

150 Graduates per year.
6-8 Phd graduates per year.
25-30 Master & Specialist graduates per year.
400 Professors / Assistant Professors

200 Researchers / PhD students

3 Research Centers with different research lines in Computer Science. National and International projects. Technology transfer agreements.
Undergraduate Degrees

- Licenciatura en Informática (5 years)
- Licenciatura en Sistemas (5 years)
- Ingeniería en Computación (5 years)
- Analista Programador Universitario (3 years)
- Analista en TIC (3 years)
Research Centers R+D+I

Instituto de Investigación en Informática LIDI
III-LIDI

Laboratorio de Investigación y Formación en Informática Avanzada. LIFIA

Laboratorio de Nuevas Tecnologías en Informática LINTI
Its main goals are:

1. To develop projects that generate concrete and meaningful knowledge transfers of technology from the University to the society.

2. To research in Computer Science focusing on technological areas whose knowledge and development are meaningful for our country.

3. To contribute to training, development and specialization of human resources in Computer Science.
**Human Resources**

24 Senior researchers.

23 Junior researchers/Doctoral students/Postgraduate thesis students.

10 Undergraduate students/Thesis students.

3 Support staff members.

21 Senior researchers from other Universities participate in the R+D+I projects of the Institute.
There are 35 University Professors.

27 of them have a Postgraduate degree. 
13 of them are Ph.D from UNLP and overseas universities.

16 members are Ph.D students in Computer Science.

This staff constitutes one of the most relevant IT Research Institutes in Argentina.


Intelligent Systems. Applications in Pattern Recognition, Data Mining and Big Data
Research Projects


- Software Engineering for hybrid scenarios.
- Digital Governance. Process improvement.
- Methodologies and tools for the appropriation of digital technologies in hybrid educational scenarios.


- Multiprocessor Architectures in High Performance Computing.
- Processing for Real Time / Robotic problems
- Models and computational methods. Signal processing and pattern recognition.

Intelligent Systems. Applications in Pattern Recognition, Data Mining and Big Data

- Design and implementation of predictive and descriptive models.
- Text Mining: characterization and categorization of documents.
- Techniques for mining large volumes of data.
- Machine learning applied to pattern recognition.

- Characterization of multiprocessor architectures for HPC, analyzing techniques for code development.

- Multicore, many-core. GPU, FPGA, MIC, low cost processors (e.g. Rasberry Pi). Hybrid architectures

- Scheduling for asymmetric processors.

- Power-performance analysis.

- Fault tolerance.

- Cloud robotics

- Parallelization of multiprocessor solutions.
- Languages and techniques for parallel computing. Programming Cost of developing the solutions.
- Evaluation Metrics (performance, energy efficiency) on different platforms
- Scientific applications, searches, simulations, bioinformatics, big data.
- Environments for teaching parallel computing.

Multiprocessor Architectures in High Performance Computing.


Processing for Real Time / Robotics problems

Models and computational methods. Signal processing and pattern recognition.

- Multiprocessor Architectures in High Performance Computing.
- Processing for Real Time / Robotics problems
  - Software for real-time systems.
  - Real-time operating systems.
  - Embedded systems. Microcontrollers Sensors
  - Edge & Fog Computing.
  - Robotics - IoT.
- Models and computational methods. Signal processing and pattern recognition.

- Pattern Recognition.
- Supervised and unsupervised classification.
- Image Processing.
- Positioning, navigation and location systems.

Multiprocessor Architectures in High Performance Computing.


Processing for Real Time / Robotics problems

Models and computational methods. Signal processing and pattern recognition.

- Software Engineering for hybrid scenarios.
- Digital Governance. Process improvement.
- Methodologies and tools for the appropriation of digital technologies in hybrid educational scenarios.

- Software Engineering to attend the development of systems on different environments.
- Systems for different devices and multi-devices.
- Ubiquitous systems
- Web systems

- Information and knowledge society.
- Storage and processing of information.
- Digital city
- Digital governance
- Public services
- Quality

- Design, development, configurations and practices in digital environments (3D virtual environments, simulated environments and laboratories, social networks).
- Design, production and evaluation of digital educational materials.
- Study of learning objects, frameworks for the design and development of them.
- Tools and methodologies for collaborative work mediated by ICTs (self-regulation and metacognitive abilities).
- Paradigms of person-computer interaction in educational scenarios (augmented reality, tangible interaction, virtual reality).
- Serious games as educational activities.

Software Engineering for hybrid scenarios.

Digital Governance. Process improvement.

Methodologies and tools for the appropriation of digital technologies in hybrid educational scenarios.
Intelligent Systems. Applications in Pattern Recognition, Data Mining and Big Data

- Design and implementation of probabilistic clustering models.
- Adaptation of particle clusters for the extraction of classification rules.
- Processing of time series.
- Recommendation systems based on structured and unstructured information.
- Neural networks and optimization techniques.

Design and implementation of predictive and descriptive models.

Text Mining. Characterization and categorization of documents.

Techniques for mining large volumes of data.

Machine learning applied to pattern recognition.
Intelligent Systems. Applications in Pattern Recognition, Data Mining and Big Data

- Design and implementation of predictive and descriptive models.
- Text Mining. Characterization and categorization of documents.
- Techniques for mining large volumes of data.
- Machine learning applied to pattern recognition.
- Structured and unstructured methods of document representation.
- Processing of natural language.
- Analysis of feelings and opinion mining.
- Automatic summary of documents.
- Extraction of causal sentences.
Intelligent Systems.
Applications in Pattern Recognition, Data Mining and Big Data

- Design and implementation of predictive and descriptive models.
- Text Mining. Characterization and categorization of documents.
- Techniques for mining large volumes of data.
- Machine learning applied to pattern recognition.
- Algorithms for MapReduce and Spark frameworks.
- Processing Data Flows.
- Dynamic clustering
- Solutions for severe class imbalance.
Intelligent Systems. Applications in Pattern Recognition, Data Mining and Big Data

- Design and implementation of predictive and descriptive models.
- Text Mining. Characterization and categorization of documents.
- Techniques for mining large volumes of data.
- Machine learning applied to pattern recognition.
- Computer vision
- Detection and classification of objects in video.
- Convolutional neuronal networks.
- Representation and detection of dynamic gestures.
- Recognition of sign language.
- Pedestrian detection.
- Face recognition
• **Computer Science PhD Studies**
  
  • Software Engineering  
  • Data Networks  
  • High Performance Computing  
  • Computer Technology applied to Education  
  • Data Intelligence oriented to Big Data

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**5 Master Degrees**

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**6 Specialist Degrees**
1570 active graduate students

159 PhD students

> 100 Professionals taking courses each year

95 Professors from different countries
Students and Graduates

**Students**

- Graph showing trends in student numbers.

**PhD students**

- Graph showing trends in PhD student numbers.

**PostGraduates**

- Graph showing trends in postgraduate numbers.
The School of Computer Science offers **12 Postgraduate degrees**: 1 Doctorate, 5 Masters and 6 Specializations, **8 of which are supervised by researchers of III-LIDI**:
PhD Thesis 2015-2019

“Un modelo de arquitectura para un sistema de virtualización distribuido”. Pablo Pessolani. 2018


“Análisis de rendimiento y optimización de algoritmos paralelos Best-First Search sobre multicore y cluster de multicore”. Victoria Sanz. 2015.

PhD Thesis 2015-2019

“Software para arquitecturas basadas en procesadores de múltiples núcleos”
Emanuel Frati. 2015

“Simulación y optimización como metodología para mejorar la calidad de la predicción en un entorno de simulación hidrográfica”.
Adriana Gaudiani. 2015

“PEM – Modelo de Ejecución Paralela basado en redes de Petri”
Gustavo Wolfmann. 2015

“Arquitectura asimétrica multicore con procesador de Petri”.
Orlando Micolini. 2015

“Memorias matriciales correlacionadas cuánticas, simples y mejoradas: una propuesta para su estudio y simulación sobre GPGPU”.
Mario Mastriani, 2015.
PhD Thesis 2015-2019

“Reconocimiento de gestos dinámicos y su aplicación al lenguaje de señas”
Franco Ronchetti. 2017

“Extracción de reglas utilizando estrategias adaptativas”
Laura Lanzarini. 2017

“Generación automática inteligente de resúmenes de textos con técnicas de soft computing”
Augusto Villamonte. 2019
Research Projects

PhD Thesis in course


Metodología de Detección de Fallos Transitorios en Aplicaciones Paralelas sobre Cluster de Multicores.
Diego Montezanti

Paralelizacion de algoritmos y evaluación de performance para modelos de simulación paralela con alta demanda computacional en arquitecturas GPU y multiGPU.
Erica Montes de Oca

Modelizaciòn y Simulacion basada en Agentes Aplicada a la Arquitecturas de Entrada/Salida de los computadores Paralelos.
Diego Encinas

Optimización del Consumo Energético en Algoritmos Paralelos.
Leandro Libutti

Big Data sobre redes sociales aplicado a situaciones de emergencias humanitarias utilizando HPC.
María José Basgall
PAPERS 2017-2019


10 Books / Book Chapters.

13 papers published in scientific magazines.

21 papers published in International Conference Proceedings.

PhD in COMPUTER SCIENCE

Objective

Form a postgraduate capable of achieving excellence in a specific area of Computer Science, through a set of courses, a research stay in a recognized University and a PhD Thesis with original contributions to the discipline.

Supervisor

PhD. Marcelo Naiouf.
MASTER in HIGH PERFORMANCE COMPUTING

Objective

This Master's degree is oriented to undergraduates of Computer Science and Engineering looking for up-to-date knowledge of the fundamentals of the subject and of the technologies currently in use in High Performance Computing, with research capacity and who can complete the PhD in Computer Science, continuing the thematic axes of the Master.

Supervisor

Eng. Armando De Giusti.
MASTER IN DATA INTELLIGENCE ORIENTED TO BIG DATA

Objective

This Master's degree is aimed at creating professionals capable of designing and implementing Intelligent Systems to process Big Data, extracting knowledge, patterns and/or relationships relevant to decision making. The career focus is interdisciplinary forming graduates with R & D ability who can complete the PhD in Computer Science, continuing the thematic axes of the Master.

Supervisor

PhD. Laura Lanzarini
III-LIDI Postgraduate Relationship

8
Members and external Professors from III-LIDI take part in the Degrees Academic Committee

30
Postgraduate courses have members from III-LIDI as Professors

29
Members of III-LIDI are part of the teaching staff
III-LIDI members are part of the teaching staff in the undergraduate courses of study from the School of Computer Science.

- Licenciatura en Informática (5 years)
  28 professors from this course of study belong to III-LIDI.

- Licenciatura en Sistemas (5 years)
  The Supervisor and 28 professors from this course of study belong to III-LIDI.

- Analista en Computación (3 years)
  The Supervisor and 24 professors from this course of study belong to III-LIDI.

- Analista en TIC (3 years).
  The Supervisor and 24 professors from this course of study belong to III-LIDI.

- Ingeniería en Computación (5 years).
  The Supervisor and 16 professors from this course of study belong to III-LIDI.
III-LIDI establishes agreements on technology transfer with private companies and the public sector for the analysis, design and implementation of software solutions.

One of its **main goals** is to take out patents and Registered Intellectual Property for technological products.

The emphasis is on projects that generate technological (or methodological) **innovation** in the public sector as much as in the private sector.

III-LIDI offers **training** and **consultory** to companies and public sector.
III-LIDI is connected to companies and Government agencies
The III-LIDI participates in different national and international scientific events (congresses, conferences, lectures).

Since 2013, III-LIDI annually organizes the Conference on Cloud Computing and Big Data.
There are Development and Innovation Projects that are carried out by Teams of Students coordinated by Professors/Researchers from III-LIDI. The resulting products from the Projects are presented each year at the Science and Technology Exhibition from the School of Computer Science.
III-LIDI approximately 500 m² building.

It has Equipments for the different lines of research and development.

There are available Equipments due to national and international agreements.

It is member of the SNCAD (High Performance Computer Science National System)