INSTITUTO DE AUTOMÁTICA (INAUT)

FACULTAD DE INGENIERÍA
UNIVERSIDAD NACIONAL DE SAN JUAN ARGENTINA
Total enrollment UNSJ: 15,000 students
Total enrollment FI: 3,000 students
SCHOOL OF ENGINEERING

Alumnos:

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<table>
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<tbody>
<tr>
<td>University</td>
<td>15,000</td>
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<tr>
<td>School of Engineering</td>
<td>3,000</td>
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<tr>
<td>Electronics Engineer</td>
<td>500</td>
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<tr>
<td>Bioengineering</td>
<td>400</td>
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14 UNIVERSITY CAREER DEGREES IN ENGINEERING

16 POST GRADUATE STUDY PROGRAMS IN ENGINEERING
SCOPE

- Research and development
- Technology transfer
- Human resources in the area of Automatic Control
PERSONNEL

- Researchers (80% Full time) 22
- Engineers and technicians 7
- Administratives 3
- Postgraduate students 30
- Students at INAUT´labs (Graduation thesis per year) 15
FINANTIAL SOURCES

- National University of San Juan (UNSJ)
- National Science and Technology Secretary (SECYT) and National Agency for Science and Technology Promotion (ANPCyT)
- National Research Council (CONICET)
- Technology transfer funds
- International Agencies (ICI, CYTED, DAAD, EU, INCO, ALFA, CAPES)
AREAS OF ACTIVITIES

- Industrial automation.
- Process control.
- Robotics.
- Greenhouse control and intelligent irrigation.
- Sensors and Applications.
INDUSTRIAL AUTOMATION

- Flexible manufacturing systems: modelling, analysis, simulation and control.
- Modelling and optimization of production lines.
- Inspection on production lines.
INDUSTRIAL AUTOMATION

Flexible production line
INDUSTRIAL AUTOMATION

Visual inspection in production lines
PROCESS CONTROL

- Control of bioprocesses.
- Control of AC motors.
- Control of plants growth in greenhouses.
- Intelligent irrigation.
PROCESS CONTROL

pH control experimental setup
PROCESS CONTROL

Lab greenhouse setup
ROBOTICS

- Robot manipulators control: force and visual servoing, teleoperation.
- Mobile robots control: mapping and localization (SLAM), trajectory control, sensor based control (ultrasound, laser and vision), teleoperation.
- Cooperative control of mobile and manipulator robots.
Control system for industrial robots with sensorial feedback
ROBOTICS

Teleoperation with a virtual environment and delay compensation
AGV teleoperation with virtual force reflexion and delay compensation
ROBOTICS

Sensors for autonomous and coordinated control
Fusion of control signals with supervision
SENSORS AND APPLICATIONS

- Ultrasound sensors
- Force sensors
- Sensors of soil humidity
SENSORS AND APPLICATIONS

Weather station based on ultrasound sensors

Sonar for blind persons

Sensor stick for blind persons
Robotic gripper with force sensing
Soil humidity sensors based on capacity principles
TECHNOLOGY TRANSFER

Greenhouse automation for curricular innovation in a technical school
TECHNOLOGY TRANSFER

ANR (Fontar-Secyt) project: Intelligent irrigation system (Vitícola Cuyo S.A., San Juan)
Visual inspection in a production line (Dulciora, ARCOR, San Luís)
INTERNATIONAL COOPERATION

Cooperation agreements
- Rheinisch-Westfälische Technische Hochschule Aachen, Germany.
- DAAD, Germany: posgraduate scholarships for Latinamerican students at INAUT.
- Universidad de Valladolid, Spain.
- Universidade Estadual de Campinas, UNICAMP; Universidade Federal do Espírito Santo, Vitoria; Universidade Federal de Sergipe, Aracaju, Brasil.

Cooperation projects
- Università di Verona (Italia).
- Universidade Federal do Espírito Santo (Brasil).
- Redes Cyted (España, Portugal y Latinoamérica)
- Proyecto ALFA-Doctorado (Unión Europea).
POSTGRADUATE PROGRAM (1990)

- Doctorate students: 25
- Graduated PhD: 13
- Magister students: 7
- Graduated Mg: 22
- Foreign students: 6 (DAAD scholarships)