



Universidad de Jaén

	OFFER AS A PROJECT PARTNER
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WebSite	<a href="http://ceatic.ujaen.es">http://ceatic.ujaen.es</a>
Keywords specifying the expertise	Natural Language Processing; Information Extraction; Information Retrieval; Text Mining; Machine Learning; Opinion Mining and Sentiment Analysis; Linked Open Data; Linguistic Resources Generation; Soft Computing; Evolutionary Algorithms; Fuzzy Logic; Environmental Applications; Bioinformatics; Decision Support Systems; Consensus Reaching Processes; Linguistic Decision Analysis; Computing with Words; Preference Modelling; Computational Geometry; Geometric Modeling; Computer Graphics; Geoinformatics; Geographic Information Systems; Smart Wireless Sensors Networks; Fuzzy Rule-based Systems; Computer Networks; Wireless Networks; Processing of Ultrasonic Signals; Perceptual Audio Coding; ECG Signals Compression; Spectral Estimation; Audio Streaming; Music Transcription; Supercomputing; Smart Environments; Virtualization; Cloud Computing
Brief description of expertise	<p>The Advanced Studies Center in Information and Communication Technologies is a non-profit center that brings together research groups and resources that they allow the knowledge advance, the innovation and the development in the field of the information and communication technologies by mean of the education, the scientific research and the technological develop.</p> <p>Even in the case of a newly established center, it has a highly qualified staff with a large research experience. Center research staff includes more than 40 people working in the field of the ICT, having authored numerous publications in peer-reviewed international journals, and being organized into 6 research groups:</p> <p><b>Intelligent access to information systems (TIC-209)</b> Research and application of techniques of natural language processing, i.e. Human Language Technologies (HLT) for information retrieval, mass treatment of unstructured information and advanced applications, such as analysis of opinions and feelings, seeking answers or simplifying texts,</p> <p><b>Engineering of telematics systems (TIC-220)</b> Intelligent wireless sensor networks. Fuzzy rule-based systems. Computer networks. Wireless networks.</p> <p><b>Graphic computer science and geomatics of Jaén (TIC-144)</b> Computer Graphics for data modeling, simulation, virtual reality, serious games, video games and 3D web. 3D Spatial Information Systems, smart cities, spatial data mining.</p> <p><b>Intelligent systems and data mining (TIC-207)</b> Data mining based on fuzzy systems and bioinspired systems for extraction of information from large databases.</p>



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	<p><b>Intelligent systems based on fuzzy decision analysis (TIC-206)</b> Recommender systems and decision support systems applying linguistic information modeling methodologies using computing with words.</p> <p><b>Treatment of signals in telecommunication systems (TIC-188)</b> Signal processing applications in artificial intelligence, multimedia, music technologies (such as separation of sound sources and development of musical applications), inspection and characterization of materials using ultrasound, computer vision and soft computing.</p>
<b>Skills and competences</b>	<p>Researchers who are part of the center have a large research background, having participated in several research projects, carried out a large number of publications in international journals indexed and counting with extensive experience in project management and dissemination activities.</p> <p>Their skills cover several areas in the field of ICT, with particular emphasis on areas such as networks, computer graphics, natural language processing, artificial intelligence, supercomputing, big data, data mining, bio-inspired systems, recommender systems, decision support systems, signal processing, internet of things and smart environments.</p> <p>In all the above areas, the research staff can demonstrate an extensive experience, backed by research results as well as several deployed systems currently in production.</p>
<b>Research infrastructure of the organization</b>	<p>The center has a wide range of computing resources and software tools that offers to its researchers:</p> <ul style="list-style-type: none"><li>○ A lab with more than 130 sensors and over 30 different types of them to analyze the behavior of the inhabitants.</li><li>○ A supercomputing cluster for high performance, big data and GPU computing.</li><li>○ A private cloud to share and store information safely.</li><li>○ A virtualization cluster to provide virtual machines on demand to deploy any necessary software.</li><li>○ A 3D portable scanner able to making textured and accurate 3D model of objects.</li><li>○ A multimedia room for video conferencing, meetings and workshops.</li><li>○ A mobile classroom for practical activities such as courses, workshops or seminars.</li><li>○ Several private software tools to work together.</li></ul>
<b>Research networks</b>	<p>Center research staff belong to several networks and organizations:</p> <ul style="list-style-type: none"><li>○ The Spanish Society of NLP (SEPLN)</li><li>○ The European Association for Computer Graphics (Eurographics)</li><li>○ Thematic National Network ATICA (for the advancement and transfer of applied computational intelligence)</li><li>○ Thematic National Network TIMM (for managing multimodal and multilingual information)</li><li>○ Thematic National Network ReTeLe (for resources for language technologies)</li><li>○ LODISCO</li></ul>



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### Commitment offered

The availability of a wide range of researchers with proven competence in their knowledge areas, makes it possible that the center stands as an entity able to commit to provide high quality services carrying out cutting-edge research in several fields such as:

- Monitoring the evolution of public opinion and reputation of products, organizations or persons, applications for tourist information, diagnosis of learning disabilities and improvement of accessibility.
- Applications related to smart cities and 3D spatial data management, serious games, simulation and analysis of medical imaging, scanning and managing of 3D models, including 3D printing.
- Search on large databases of music data, distributed music applications, machine vision systems for industrial processes and cataloging of heritage, non-destructive systems for structural studies of materials.
- Development of decision support systems in business and recommendation systems for e-commerce.
- Analysis of energy scenarios, marketing and e-commerce studies using web mining, analysis of quotations and medical data, high performance computing.
- Use of wireless sensor networks for monitoring of various environment magnitudes.

In addition, we have a great experience in dissemination tasks, not only by the publication of papers in the main conferences and journal of our area, but also organizing other activities like congress and workshops.

### Project experience

The center research staff has participated in more than 50 international, national and regional R&D projects.

Right now, its researchers are involved in 9 R&D projects at national and regional level (grant date, research group, project name):

2012 *Evaluación, caracterización y modelización de productos pétreos mediante ensayos no destructivos y tratamiento de información multimodal* (Evaluation, characterization and modeling of petrous products by means of nondestructive testing and treatment of multimodal information).

2015 *Aportaciones para las ciudades inteligentes. Hacia un SIG 3D del subsuelo* (Contributions for smart cities. Towards a subsoil 3D GIS).

2015 *Indicadores de ruido borroso para el análisis de la contaminación acústica en entornos urbanos mediante redes de sensores inalámbricos* (Fuzzy noise indicators for the analysis of noise pollution in urban environments using wireless sensor networks).

2015 *Modelo lingüístico difuso para la evaluación de edificios inteligentes* (Fuzzy linguistic model for the evaluation of smart buildings).

2015 *Retos actuales en minería de datos: nuevos modelos para la resolución de problemas con clases difíciles* (Current challenges in data mining: new models for the resolution of problems with difficult classes).



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	<p>2016 <i>Procesos de consenso inteligentes para la toma de decisiones en grupo bajo incertidumbre</i> (Smart consensus processes for group decision-making under uncertainty).</p> <p>2016 <i>Reconocimiento de entidades digitales. Enriquecimiento y seguimiento mediante tecnologías del lenguaje</i> (Recognition of digital entities. Enriching and monitoring by means of language technologies).</p> <p>2016 <i>Modelo de ciencia de datos para la resolución de problemas complejos. Aplicaciones en biomedicina, biotecnología, energías renovables y empresa</i> (Science data model for the resolution of complex problems. Applications in biomedicine, biotechnology, renewable energy and enterprise).</p> <p><i>Interacciones audio-visuales para robots en Smart Homes</i> (Audiovisual interactions for robots in Smart Homes).</p> <p>A full list of all R&amp;D projects can be found at <a href="http://ceatic.ujaen.es/en/i-d-i-projects">http://ceatic.ujaen.es/en/i-d-i-projects</a></p>
<b>Programmes of interest</b>	H2020, 3rd Health Programme, EUREKA, COST, LIFE+
<b>Call identifier</b>	<a href="https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/index.html">https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/index.html</a>
<b>Topic identifier</b>	<a href="https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/index.html">https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/index.html</a>
<b>UJA overview</b>	<p>The University of Jaén (UJA) is an EHEA medium-sized Spanish public university (some 16000 students and almost 1000 lecturers) that was established in 1993 and is organized into 6 main Schools/Faculties (Faculty of Law and Social Sciences, Faculty of Social Work, Faculty of Human Sciences, Faculty of Experimental Sciences, Faculty of Health Sciences and two Schools of Engineering). In addition to its 124 research groups, the University of Jaén has 4 Advanced Research Centers (Earth Sciences, Energy and Environmental Sciences, Olive Oil Research and Development and Computational Sciences) and an Institute on Iberian Archaeology Research. Moreover, UJA is integrated into a university network recognized as Campus of International Excellence in the fields of Agrifood (CEIA3), Climate Change (CamBio) and Historical Heritage (PatrimoniUN10). UJA permanently welcomes new foreign research proposals as part of a conscious effort to increase its international profile and widen both its knowledge and its horizons.</p>