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AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: SUDDAPALLI , CHAITANYA KUMAR
Referencia: RYC2019-027144-I
Área Temática: **Tecnologías de la información y de las comunicaciones**
Correo Electrónico: suddapallichaitanya@gmail.com

Título:

Frequency Comb Technologies

Resumen de la Memoria:

The main focus of my research is the development, study, and application of novel coherent light sources with tailorable properties in wavelength regions inaccessible to conventional lasers and other existing technologies. I would like to stream-line my future research toward optical frequency comb generation, particularly in the mid-infrared molecular figure-print region. By exploiting optical frequency conversion techniques in novel nonlinear materials and deploying innovative design architectures, tunable radiation in new and difficult spectral regions from the ultraviolet and visible to the near- and mid-infrared can be generated. Throughout my career, I have developed light sources based on harmonic generation and mixing, optical parametric generation and amplification, and optical parametric oscillators (OPOs) in all temporal domains from the continuous-wave (cw) to the ultrafast picosecond and femtosecond time-scales. These innovative light sources offer great practical utility for a variety of scientific and technological applications including spectroscopy, trace gas detection and environmental sensing, quantum information, frequency metrology and synthesis. The cw OPO that I have developed as a part of my doctoral thesis still holds the record for highest mid-infrared output power generated. During my postdoctoral research, I have demonstrated several ultrafast OPOs based on novel nonlinear materials generating practical output powers at wavelengths as long as 8 µm in the deep mid-infrared. I have been involved in several national and international collaborative projects where I have conducted experiments with interdisciplinary teams, resulting in high-quality publications. Another important aspect of my career is the ability to use my cutting-edge research expertise in developing industrial prototypes. I have designed and developed one cw and two ultrafast OPOs, which are now available as commercial products. Along with scientific research, I have also devoted significant effort in science dissemination through design, development and implementation of outreach activities addressing various target groups of the society ranging from school children to elderly people.

My top 5 scientific contribution and associated publications:

1. Faster mid-infrared imaging for cancer screening.
   [Optica 6, 702-708 (2019)]

2. High-repetition-rate deep-infrared picosecond optical parametric oscillator.
   [Opt. Lett 42, 2606 (2017)]

3. Few-cycle, broadband, mid-infrared optical pulses from an oscillator.
   [Laser Photonics Rev. 8, L86, (2014)]

4. Compact table-top mid-infrared source for surgical applications.
   [Opt. Lett 36, 3236 (2011)]

5. Involvement in the European Union H2020 ITN project: Mid-Tech as a scientific investigator from Radiantis and supervised five academic doctoral students and one industrial doctoral student. Currently, I am supervising two doctoral students.

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Resumen del Currículum Vitae:

Suddapalli Chaitanya Kumar received the B.Sc. degree in mathematics, physics and electronics from Acharya Nagarjuna University, India, in 2003, and the M.Sc. degree in physics from Indian Institute of Technology Guwahati, India, in 2006. He was awarded PhD in photonics with Excellent Cum Laude with Honours at ICFO-The Institute of Photonic Sciences, Barcelona, Spain, in 2012, for his thesis on high-power, fiber-laser-pumped optical parametric oscillators from the visible to mid-infrared. He was a Postdoctoral Fellow at ICFO from 2012-2015 and Research Fellow from 2015-2017. He was a Visiting Research Associate at the National Institute of Standards and Technology (NIST), Boulder, CO, during 2016. Currently, he is a Torres y Quevedo Fellow at Radiantis. His research interests include fiber-based optical frequency conversion sources, and continuous-wave and ultrafast optical parametric oscillators (OPOs) from the ultraviolet to mid-infrared. He has co-authored more than 75 peer-reviewed and invited papers in leading international journals in Photonics, with over 1300 citations, and has presented more than 130 contributed, post deadline and invited papers at major international conferences such as SPIE Photonics West, CLEO-USA and CLEO-Europe. His technical expertise and industrial experience as a consultant, led to the development of

more than 3 commercial products and 4 patents. Throughout his career, he has worked on several funded projects with active international collaborations, and some of his research works have been highlighted in Laser Focus World and Nature Photonics. He is a professional member of Optical Society of America (OSA), The International Society for Optics and Photonics (SPIE) and European Physical Society (EPS). He also served as international outreach project manager at the Knowledge and Technology Transfer office of ICFO during 2013-2015. He is the recipient of the ICFO PhD thesis award in 2013, Universitat Politècnica de Catalunya (UPC) extraordinary doctoral thesis award in 2014 for his outstanding contribution to applied research and participated in the prestigious 66th Lindau Nobel Laureate meeting, Germany, in 2016. He also served on the scientific and technical program committees of several international conferences such as NLO-50 in 2012, Mid-infrared Coherent Sources, MICS-2018, 2020; EPS-QEOD Europhoton Conference-2018, 2020 and SPIE Photonics West-2020.

Key Performance Indicators:

Journal publications: 73
Invited reviews: 4
Contributed reviews: 1
Patents: 4
Conference proceedings publications: 11
International conference presentations: 125
Postdeadline presentations: 4
Invited talks: 11
Publications under review: 3
Google scholar citations: 1900
Web of science citations: 1330 (Source: Publons, Web of Science Researcher ID)
Cumulative impact factor: 247.213
H-index: 20
Number of publications in Q1 journals: >69
First/second author publications: 70
Number of publications as corresponding author: 43
Research experience: 8 years
Industrial experience: 4 years
Research visits: 6
Number of master students supervised: 3 (Successfully completed)
Number of PhD students supervised: 6 (5 academic + 1 industrial PhD successfully completed)
Number of PhD students currently supervising: 2 (academic)
Funded projects involved: > 10
Involvement in EU funded project: 2 (FP7-MIRSURG, H2020-Mid-Tech)

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA ESTATAL DE INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: RIVADENEYRA TORRES, ALMUDENA
Referencia: RYC2019-027457-I
Área Temática: **Tecnologías de la información y de las comunicaciones**
Correo Electrónico: almu.rt@gmail.com

Título:

Emerging technologies for ubiquitous monitoring and transmission of physico-chemical variables

Resumen de la Memoria:

My expertise is the design, fabrication and integration of printed and flexible devices based on new materials in functional electronic systems. The applications covered by my research are supported by the advancement on five fundamental pillars aiming:
- To develop environmental parameters sensors for a ubiquitous monitoring devoted to achieve smarter solutions for a better life. This includes detection of different gas species, humidity, force, among others physical and chemical parameters.
- To produce new technologies for biopotential electrodes targeting cheaper and seamless integration in healthcare systems.
- To implement new energy harvesting devices covering different strategies (solar energy, Seebeck effect, triboelectric generators) for the autonomous operation of the sensing and monitoring solutions.
- To integrate the previous technologies for the development of fully functional system with wireless transmission of the information.
- To conceive new characterization techniques to tackle with the particularities of the new materials, devices and systems.

Since the beginning of my research activities in 2010, I have published 9 peer-reviewed contributions on the previous lines trying to achieve excellence in international journals within the first positions of their categories (Carbon, Sensors and Actuators B, Scientific Reports, IEEE IoT, Nanomaterials). My scientific career has been exponentially growing achieving worldwide relevance; as an example 820 out of my 876 citations have been obtained in the last 5 years Another proof of my research maturity and European reputation in my field is the fact that I actively collaborate since 2017 as external reviewer of the European Commission and I have also collaborated as external reviewer for the Flanders Innovation & Entrepreneurship and the Croatian Science Foundation. I have also been invited to more than 10 talks in research institutions, conferences and workshops and I have acted as reviewer of more than 15 journals and Guest Editor of 3 Special Issues. In addition, I have been engaged in 10 research projects and obtained 10 predoctoral and postdoctoral fellowships at national and European level. It is worth mentioning that I have been granted with a Marie Curie Individual Fellowship Project for the development of self-powered printed sensors, a BBVA-Leonardo Project to create a wireless and ubiquitous platform for monitoring physiological variables through salivary motes, managing a total budget over 210k , and I have been recipient of the Young Research University of Granada Social Council award.

Furthermore, I would also highlight my work capacity. I have been able to combine studies and work and even to study simultaneously two different master degrees. This fact shows my capability of not only succeeding in multitasking and multidisciplinary works, but also in managing time and stress. These characteristics are fundamental in leading a fruitful and pioneer research line.

Finally, thanks to the diversity of teaching activities that I have been involved in, I have been in close contact with students, coming up with fruitful projects and helping me to get better in my presentation skills, among others benefits.

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Resumen del Currículum Vitae:

EDUCATION
PhD degree at the University of Granada in 2014.
Postgraduate in Renewable Energies by Catholic University of Ávila (2012)
Master in Microelectronics by the University of Sevilla (2015)
Engineer in Industrial Management by the University of University of Jaén (M.A.Sc., 2015)
Research and Techniques in Markets by the University of Granada (M.A.Sc., 2012)
Electronics Engineer by the University of Granada (M.A.Sc., 2012)
Master in Computers and Network Research by University of Granada (2010)
Telecommunication Engineer by the University of Granada (M.A.Sc., 2009)
Environmental Sciences by the University of Granada (M.A.Sc., 2009)

RESEARCH PRODUCTION
H-index (Google Scholar): 17
Citations (Google Scholar): 876
Publications in indexed journals: 59 (25 first author, 10 main researcher and/or last author)
Publications in peer-reviewed proceedings: 55
Invited talks: 10

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

POSITIONS
Oct 2018 today: Marie Curie Individual Fellowship at UGR
2015 2018: Postdoctoral researcher at the Technical University of Munich (TUM)
2014 2015: Contrato Puente at the Department of Electronics at UGR
2010 2014: Predoctoral Scholarship (FPU) at the Department of Electronics at UGR

RESEARCH PROJECTS
2019 -2021: PI of a Leonardo-BBVA Project (success application rate <2%)
2018 2021 : PI of a Marie Curie IF grant (success application rate < 8%)
2018 2020: Guarantor in 3 National and Regional Infrastructure Project totalizing a budget over 500k
2010 2018: Participated in 10 R+D+I projects as a researcher funded in competitive tenders by public or private entities: 3 European projects (principal investigator of 1 of them), 1 project funded by the Spanish Ministry, 1 project funded by the Andalusian Government and 3 projects funded by private companies

RESEARCH STAYS
2018: Universidad de Nariño (Colombia)
2013: Sensors and Actuators Laboratory. École Politechnique de Lausanne (Switzerland). Printed cantilever. Fundings: Cei Biotic 2013
2011: Tyndall National Institute (Ireland). Piezoelectric harvester. Fundings: FPU mobility grant
2008 2009: Technical University Berlin (Germany). Fundings: Erasmus Programm

TEACHING ACTIVITIES
+900h Bachelor and master courses at UGR and TUM
8 Master and bachelor thesis supervised
1 PhD advisor
5 PhD mentor

AWARDS
2019: Young Research Career from Consejo Social UGR
2016: Best poster at LOPE-C
2009: Best Records at ETSSIT (UGR). Best track record in 2009 in the ETSIIT at UGR
2003: Matricula de Honor 2003. Best track record in 2003 at High School

OFFICIAL POSTS
2018 today: Board Member of the Dept. of Electronics and Computer Technology (UGR).
2013 2015: Board Member at the Centre of Information and Computer Technologies (UGR).
Belonging to several Board Committees (AllSensors, SensorDevices, Multimat).
Chair of special track in Emerging Sensor Technologies (AllSensors 2020).
Chaired a special track in Printed and Flexible Sensors and was panelist in Trends and Challenges in using Micro and Nano-technologies for (all)Sensors (AllSensors 2018).
2017-2019: Acted as Expert Reviewer for European Commission, the Flanders Innovation & Entrepreneurship and Croatian Science Foundation.
Since September 2019, belonging to the Topic Editor Team of Molecules Journal (MDPI).

MINISTERIO
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E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: CABALLERO BAYERRI, JUAN
Referencia: RYC2019-028577-I
Área Temática: **Tecnologías de la información y de las comunicaciones**
Correo Electrónico: juan.caballero@imdea.org

Título:

Defending Against Cybercrime

Resumen de la Memoria:

The digital society transformation has made information systems to be a central piece of of most industries such as healthcare, banking, transportation, and entertainment. However, as the use of digital systems has increased, so have the threats to those systems. Almost every day we hear of new breaches of personal and enterprise data, as well as of cyberattacks involving cybercriminals and more recently nation states. Such threats undermine the trust of citizens in digital systems, hampering the adoption of new technologies (e.g., cloud computing, blockchain, machine learning, genomics, Industry 4.0, Internet-of-Things) and the digital services that leverage them.

My research focuses on computer security, including security issues in systems, software, and networks. My main research line is defending against cybercrime, which costs the global economy over $400 billion annually. Cybercriminals focus on economies of scale by monetizing large numbers of compromised Internet-connected computers, mobile phones, and IoT devices, as well as their users. Users of compromised hosts can be blackmailed to pay fees for recovering their data, previously encrypted by the attacker, or incited to buy licenses for rogue software of little value. Compromised hosts can be monetized as assets for, among others, sending spam, launching denial-of-service attacks, mining virtual currencies, faking user clicks on online advertisements, or as stepping stones to hide the attacker s real location.

Cyberattacks launched by cybercriminals and foreign nations are one of the largest threats against the information society. At the root of most cyberattacks is the installation of malicious software, i.e malware, on the compromised systems. In my research I develop novel techniques to defend against malware-based cybercrime. My research tackles four fundamental components of cybercrime: defending against malware and other unwanted programs; defending against the malicious servers on the Internet used to control the malware; defending against software vulnerabilities used to distribute the malware, and developing binary code analysis techniques to analyze the malware.

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Resumen del Currículum Vitae:

I am an Associate Research Professor and Deputy Director at the IMDEA Software Institute. I received my PhD in Electrical and Computing Engineering from Carnegie Mellon University (USA) in 2010. I was a visiting student researcher at University of California Berkeley for two years. I joined IMDEA Software as an Assistant Research Professor in November 2010, was promoted to Associate Research Professor in December 2016, and have served as Deputy Director of the Institute since September 2017. I hold a M.Sc in Electrical Engineering from the Royal Institute of Technology (KTH) in Stockholm and a Telecommunications Engineer degree from Universidad Politécnica de Madrid.

My research focuses on security issues in systems, software, and networks with a focus on defending against cybercrime. My research has produced over 50 international publications, regularly appears at the top computer security venues, and has won paper awards at the USENIX Security Symposium, the ACM Internet Measurement Conference, and the DIMVA Most Influential Paper 2009-2013.

I have attracted over 1.8 Million Euros in funding for the IMDEA Software Institute. I am the coordinator of a 4-year regional project and a 4-year national project. I have been PI for another 6 European and national projects, as well as 4 industrial contracts.

I have directed 5 Ph.D. thesis and I am currently directing another 2. I have also supervised one post-doctoral researcher, as well as 15 interns that performed their MSc thesis, BSc thesis, or practicum under my supervision.

I have been an Associate Editor for the ACM TOPS journal and program chair/co-chair for the following computer security conferences: ACSAC, DIMVA, DFRWS, and ESSOS. I have participated in over 40 technical program committees including the top venues in computer security.

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: LI , WEIQIANG
Referencia: RYC2019-027000-I
Área Temática: **Tecnologías de la información y de las comunicaciones**
Correo Electrónico: weiqiang.li.buaa@gmail.com

Título:

Earth Observation with GNSS Bistatic Radar: Instrumentation, Application and Spaceborne Mission

Resumen de la Memoria:

Global Navigation Satellite System Reflectometry (GNSS-R) is a bistatic radar concept, that uses GNSS satellites as source of opportunity for space Earth observation (EO) applications. This concept allows to obtain high spatial/temporal resolution EO measurements at low cost and low power consumption payload on-board small satellites. Successfully demonstrated in space by the UK TechDemoSat-1 (TDS-1) satellite and NASA s Cyclone GNSS (CYGNSS) mission, this technique has been receiving an increased attention due to its capability to address a broad spectrum of EO applications.

I have been working on GNSS-R technique as my main research line for more than 10 years. My long term objective is to contribute to create an sustainable and efficient EO system based on GNSS-R. My research has been oriented towards technological developments, with the due and necessary consideration of the users: space agencies and geoscientists. I have been working on different technological and scientific aspects.

1) Since my PhD project in 2007, I have led or participated in the development of advanced signal processing methods and their implementations in software (SW) and hardware (HW) GNSS-R receivers. This topic has remained as my research interest throughout my research career, resulting in publications and patents. More importantly, the SW receiver has been adapted to the spaceborne case with the state-of-the-art GNSS-R signal processing capabilities, which has been applied to the processing of the raw signals collected by the TDS-1 and CYGNSS missions. It offers unique datasets that the current onboard instruments cannot provide, leading to in-orbit demonstration of new GNSS-R observation concepts

2) My second research interest is to characterize the relationship between the bistatic radar observable and the geophysical information, and to develop appropriate retrieval approaches. My research on this topic relies on building forward electromagnetic scattering models and processing the data collected by different GNSS-R spaceborne missions. Since 2012, I have been working on a wide range of GNSS-R applications on oceanography, cryosphere and terrestrial water, leading to new findings that either open new GNSS-R EO capabilities (e.g. sea ice thickness, wetlands and inland water monitoring) or consolidate the feasibility and performance of existing concepts (e.g. ocean wind and altimetry).

3) Furthermore, I have also been working on developing a framework to define and analyze future GNSS-R mission by modeling its critical elements especially the signal statistics of the main observable. This frame work has been used in the definitions and analyses of different spaceborne mission concepts (such as the ESA planned missions GEROS-ISS, G-TERN, Cookie and HydroGNSS), and led to several technical transfer reports to space agencies.

I have acquired a global and detailed view of the GNSS-R concept. By the end of the five years of this position, I will have cemented my position as a leader in the field, by proposing, contributing and participating in future GNSS-R spaceborne missions.
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Resumen del Currículum Vitae:

I received the B.E. and PhD degrees in Electronic Engineering in 2004 and 2012 from Beihang University (BUAA). In 2012 I started my first postdoc at School of Electronic and Information Engineering (EIE) in BUAA. In Sep 2012, I was awarded ESA's international postdoc fellowship to work at the ESA European Space Research and Technology Center (ESTEC). In 2013 I took the leading role of the Global Navigation Satellites System Reflectometry (GNSS-R) research line at EIE. Since Dec 2014, I have been working at the CSIC Instituto de Ciencias del Espacio, affiliated to the Institut Estudis Espacials Catalunya (IEEC).

Towards a sustainable and efficient EO system (EOS), I have more than 10 years of experience in the field of GNSS-R, a bistatic radar concept based on the use of GNSS satellites as source of opportunity for Earth Observation (EO). This experience includes development of enabling technology and discovering scientific applications. I have published 25 relevant papers in indexed journals (23 in Q1), and contributed 48 publications to international conferences. I am co-inventor of 10 patents, one of them transferred to the industry. I lead the development of state-of-the-art software GNSS-R receivers, which have been used in UK TDS-1 and NASA CYGNSS missions raw data processing. I also contributed an End-to-End (E2E) framework to simulate spaceborne GNSS-R missions, which has been used in the definitions of ESA s Scout HydroGNSS mission, the Cookie concept, and the proposed G-TERN mission. Along this line, I have contributed

with more than 10 technology transfer reports to international space agencies.

My professional profile has been modeled through the work carried out in 3 international institutions (Chinese BUAA, European ESTEC and Spanish ICE(CSIC-IEEC). I have participated in 19 national/international projects (8 as PI/co-PI, with total funding of ~400k). I have been also lead or participate in different international collaborations programs. Among others, I am the Spanish convener of an international joint research centre between ICE (CSIC-IEEC) and the Shanghai Academy of Spaceflight Tecnology (SAST). Also I have been selected as coordinator of ESA-China GNSS-R working group, with participation of several European and Chinese research institutions.

I have a 7-years independent postdoc experience, leading my own original research. I have published more than 50 refereed publications, 24 of them are my 1st author works. Moreover, I have given 12 first author invited talks in international conferences. I am the PI or co-PI of 8 national/international projects, and the coordinators of international cooperation. As the outcomes of these projects, I have been awarded 3 national R&D prizes, 2 best paper/presentation awards and the Distinguished Young Scholars in Remote Sensing . I have been participated in spaceborne missions as the member of the proposal/science team, including NASA s CYGNSS mission, ESA s G-TERN mission and Scout HydroGNSS mission, and Chinese BF-1 constellation. I am the member of 2 IEEE Technical Committees (IFT and MIRS), and the session chair of 2 international conferences (IEEE GNSS+R and CSA-IAA CAST). Moreover, I have been the reviewer or member of reviewer board of top-tier journals (e.g. GRL, IEEE TRGS, RS and RSE).

MINISTERIO
DE CIENCIA
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AGENCIA
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INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: OCHOA ALVAREZ, IDOIA
Referencia: RYC2019-028578-I
Área Temática: **Tecnologías de la información y de las comunicaciones**
Correo Electrónico: idoia.ochoa@gmail.com

Título:

Improving the storage, transmission, and analysis of omics data

Resumen de la Memoria:

Dr. Idoia Ochoa obtained a Master in Electrical Engineering from Stanford University in 2012, as well as a PhD from the same university and department in 2016. Her research focused on developing algorithms to facilitate the storage, transmission, and analysis of genomic data. Her studies were funded by fellowships from La Caixa, the Basque Government, and Stanford University. Her PhD resulted in several publications in top journals and conferences. During her PhD Dr. Ochoa also conduced summer internships at Genapsys and Google. Dr. Ochoa also served as a consultant for HBO s TV show Silicon Valley .

After completion of her PhD, Dr. Ochoa joined the University of Illinois at Urbana-Champaign (UIUC) as an assistant professor in January 2017. At UIUC Dr. Ochoa started her own research group, composed of several undergraduate and graduate students (both at the masters and PhD level). Dr. Ochoa s work focuses on bioinformatics and computational biology, with special emphasis in improving the handling of omics data (e.g., by developing specialized compressors) and the analysis of several omics datasets (e.g., by improving variant identification and developing novel algorithms for the discovery of gene regulatory networks). She served as the main Principal Investigator (PI) in several projects, and was awarded a Chan Zuckerberg Initiative grant as the main PI, as well as two Strategic Research Initiative grants from UIUC. The total awarded amount was about $300K. In addition, she served as the co-PI in two grants from the government of Uruguay. Dr. Ochoa s work has resulted in several conference and journal proceedings of high quality, and she has been awarded the MIT Innovators under 35 award. She has also given several invited talks at highly ranked universities, like MIT and Princeton. Dr. Ochoa has also taught several courses at the undergraduate and graduate level.

Dr. Ochoa recently joined the School of Engineering (TECNUN) of the University of Navarra, in January 2020. She will continue with her own line of research in the area of bioinformatics and computational genomics.

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Resumen del Currículum Vitae:

I got my Bachelor in Telecommunications Engineering from TECNUN (University of Navarra) in 2009, where I also completed the master thesis funded by a Telefonica fellowship. The topic was information theory, and in particular, channel coding and the relay channel. I then went to Stanford University, to the Electrical Engineering department, where I graduated with a Master in 2012 and a PhD in 2016. I got awarded a La Caixa fellowship that fully funded my first two years at Stanford. My studies were also funded by a fellowship from the Basque Government and a Stanford Fellowship (in later years). My PhD focused on developing algorithms to facilitate the storage, exchange, and analysis of genomic data. In particular, I developed several lossless and lossy compressors for raw and aligned genomic data, a novel method for gene regulatory network discovery on RNAseq data from cancer patients, and a new setting for querying sequences in a compressed domain, with applications to biology.
During my time at Stanford I also conducted two summer internships, one at Genapsys and one at Google, both in California. At Genapsys I was in charge of developing a base calling algorithm for their new sequencing machine, and at Google I worked on signal processing, developing a decimation filter. I also served as the technical consultant for HBO TV show Silicon Valley (second season).
After graduating from Stanford, I joined the University of Illinois at Urbana-Champaign (UIUC) as an assistant professor in January 2017. At UIUC I created my own group with independence research. My group consisted on several PhD and Master students, as well as undergraduate students from UIUC and several foreign students (from China, India and Uruguay, specifically) that joined my lab in the summers. During my time at UIUC I got awarded a Chan Zuckerberg Initiative grant, and two Strategic Research Initiative grants, all as the main Principal Investigator (PI). The total amount of them combined is about $300K. In addition, I got two grants from the government of Uruguay as a co-PI with collaborators from the University of La Republica. My research focuses on the fields of bioinformatics and computational biology, and my group develops algorithms to facilitate the use of omics data, as well as novel methods to improve the accuracy of variant identification, and the discovery of gene regulatory networks. I have recently also been awarded the MIT Innovators under 35 award for my research. In addition, I have taught several courses at the undergraduate and graduate levels, such as Probability with engineering applications and Advanced Digital Communications .
I now became part of the professorate at TECNUN, University of Navarra, in Spain, since January 2020.

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: GRACIA DEL RIO, JORGE
Referencia: RYC2019-028112-I
Área Temática: **Tecnologías de la información y de las comunicaciones**
Correo Electrónico: jor.gracia@gmail.com

Título:

The Multilingual Web of Data

Resumen de la Memoria:

In the development of the Semantic Web, multilingualism has emerged as one of the major challenges. Despite considering knowledge processing on the Semantic Web as being inherently independent of any natural language, the interaction between humans and machines will remain language-dependent. In the future Semantic Web, the generation of and access to semantically structured and linked data will take place in multilingual environments, thus configuring a truly multilingual Web of Data.

The main research line of the candidate during his postdoctoral period has been, precisely, the study of the Multilingual Web of Data . This has been the main topic of his Juan de la Cierva and Juan de la Cierva-Incorporación projects. In his research, the candidate has studied the challenges that need to be addressed to make the vision of the Multilingual Web of Data come true and explored the role that cross-lingual ontology mapping and the representation of linguistic translations will play in achieving this.

This research line has been carried out in an international environment: The candidate has participated in three FP7 European projects such as DynaLearn, Monnet, and LIDER (where he developed the role of Quality Assurance Coordinator) and, currently, in two H2020 European projects as principal investigator: Lynx and Prêt-à-LLOD, and the NexusLinguarum COST Action, which the candidate coordinates as Chair. He has co-authored works with top level international researchers in the field and carried out several research stays abroad in advanced research centers such as INRIA (France), Knowledge Media Institute (United Kingdom), Università di Roma "La Sapienza" (Italy) and CITEC (Germany).

The candidate has co-organised many international events on topics related to his research line. He has led some innovation projects with international companies, and directed three PhD thesis. He leads the W3C community groups on Ontology Lexica and Best Practices for Multilingual Linked Open Data and contributes actively in other W3C and Open Knowledge Foundation groups. He has published over fifty papers in the areas of Web, Semantic Web, and language technologies, many of them in prestigious journals indexed in JCR or as full papers in top level conferences.
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Resumen del Currículum Vitae:

Currently the candidate works as "Profesor Ayudante Doctor" teaching and researching in the Computer Science and Systems Engineering Department of University of Zaragoza, Spain. From 2009 to 2017, he worked as a postdoctoral researcher in the Artificial Intelligence Department of Universidad Politécnica de Madrid, Spain, where he attained the "Juan de la Cierva" and "Juan de la Cierva-incorporación" postdoctoral positions. His current research lines are: multilingualism on the Semantic Web and linked data for language technologies.

The candidate obtained his PhD title in Computer Science in 2009 at University of Zaragoza with "cum laude" distinction and European honourable mention. During his PhD, the work of the candidate focused on heterogeneity problems in the context of the Semantic Web (ontology alignment, semantic similarities, sense disambiguation, etc.).

The researcher coordinates the "European network for Web-centred linguistic data science", a COST Action with researchers from 40 countries. He has worked on several national and European projects such as DynaLearn, Monnet and LIDER (as Quality Assurance Coordinator) and, currently, Lynx and Prêt-à-LLOD (both as Principal Investigator). He spent more than 14 months abroad during various pre-doctoral and post-doctoral research stays in high level research institutions such as INRIA (France), Knowledge Media Institute (Open University, UK), University of Rome "La Sapienza" (Italy), and CITEC (University of Bielefeld, Germany). He has led innovation projects with companies such as Semantic Web Company (Austria) and Kernerman Dictionaries (Israel).

He has served as a program committee member in more than sixty well known conferences and workshops (e.g., WWW, ACL, ISWC, COLING). He acted as program committee chair of the first edition of the LDK conference (2017). He was senior program committee member at ISWC 2017 and 2018, and track chair at ESWC 2018. The candidate has organised nineteen workshops, datathons, and tutorials on his research topics, many of them collocated with high level conferences. Currently, he chairs the W3C community groups on "Ontology Lexica" and has participated actively in other standardisation groups from W3C and the Open Knowledge Foundation. The candidate has directed three doctorate thesis: two already defended with "cum laude" distinction and International honourable mention and a third one to be defended on January 2020.

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

The candidate has published more than fifty works in the areas of the Web, Semantic Web, linked data, and language technologies. Seven of them have been published as full papers in top level conferences, ranked A or A+ in CORE (such as the World Wide Web conference or the International Semantic Web Conference) and nine were published in prestigious journals indexed in JCR (such as Semantic Web Journal, IEEE Internet Computing, Journal of Web Semantics, AI Magazine, among others). He has edited several workshop proceedings and one conference proceedings book (LDK 2017). He has edited the special issue on "Towards the Multilingual Web of Data" (Information journal) and was part of the editorial board in another four special issues of journals indexed in JCR. His scientific work accumulates 1395 citations and has an h-index of 20 according to Google Scholar.

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA ESTATAL DE INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: GIL SANTOS, EDUARDO
Referencia: RYC2019-026626-I
Área Temática: **Tecnologías de la información y de las comunicaciones**
Correo Electrónico: eduardo.gil@imm.cnm.csic.es

Título:

Optomechanical resonators for biological applications

Resumen de la Memoria:

Eduardo Gil Santos joined the Bionanomechanics Laboratory (CSIC, Spain) in October 2007 through a competitive national grant (JAE Predoc). The candidate obtained his PhD in Physics in May 2012, working on the development of novel devices, concepts and techniques in order to improve the capabilities of micro- and nano-mechanical resonator sensors. Along this period, the researcher became an expert on the experimental and theoretical treatment of the response of mechanical resonators when used as sensors, as well as on the assembly of advanced optical systems in order to characterize them. In addition, the candidate got expertise on microfabrication thanks to a stay at the Nanotech Laboratory (DTU, Denmark) in 2010. His original research about the dynamic response of coupled and one-dimensional resonators to molecular absorptions, was published in high impact scientific journals and attracted the attention of the field. The candidate published articles as 1st author in Nature Nanotechnology (2010) and Nano Letters (2009 and 2012), among others. At that time, he started to be interested in the optomechanics field and its potential application for sensing.

In 2013, the candidate joined the Materials and Quantum Phenomena Laboratory (Paris Diderot University, France), a well-recognized group on the quantum optomechanics field, thought a competitive international grant (Research in Paris). At that time, the researcher learnt theoretical and experimental aspects about optomechanical devices and their numerous applications. The researcher worked independently developing a fully new research line with the aim of applying optomechanical systems as sensors. He became an expert in optomechanical sensing, as well as in micro and nanofabrication. The candidate published articles as 1st author in Nature Nanotechnology (2015) (highlighted in the News and Views section), Nature Communications (2016) and Physical Review Letters (2017) (Journal cover and Editor¿s suggestion), among others, and co-authored a patent. His pioneer work acquired international recognition, being invited to 6 international conferences.

In November 2016 the researcher came back to the Bionanomechanics Laboratory by means of a highly competitive European grant (Individual Fellowship, Marie Sklodowska-Curie Actions). He built his own research line focused on the application of optomechanical resonators for biological applications. The results obtained led to two patents (registered), together with two high impact journal articles (one submitted to Nature Nanotechnology, another one in preparation), among others. In February 2019, the candidate obtained a highly competitive national project (ComFuturo) as principal investigator. The project is focused on the detection of viruses and bacteria in liquid media, through the characterization of their optical and mechanical properties using optomechanical resonator sensors.

In addition to its own research line, the candidate is currently involved in an ERC consolidator project (LIQUIDMASS) and a FET Proactive one (VIRUSCAN). Nonetheless, his ambition is to get funding by his own. In the near future, he plans to focus his research on the study of bio-optomechanical systems, systems where the optomechanical device is the biological entity itself. To this aim, he has requested several national and international projects (ERC, Retos...)
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Resumen del Currículum Vitae:

CURRENT POSITION
ComFuturo Researcher: Instituto de Micro y Nanotecnología , Spain. Feb 2019-Present

PREVIOUS POSITIONS
Postdoctoral researcher: Instituto de Micro y Nanotecnología , Spain. Nov 2016-Jan 2019
Postdoctoral researcher: Université Paris Diderot , France. Feb 2013-Oct 2016
Postdoctoral researcher: Instituto de Microelectrónica de Madrid , Spain. May 2012-Jan 2013
PhD student: Instituto de Microelectrónica de Madrid , Spain. Oct 2007-2012

EDUCATION
PhD in Physics. Universidad Autónoma de Madrid (2012)
Master Degree in Advanced Materials and Nanotechnology Universidad Autónoma de Madrid (2008)
Degree in Physics. Universidad de Santiago de Compostela (2007)

AWARDS AND FELLOSHIPS

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Postdoctoral Project: ComFuturo Actions (2018)
Postdoctoral Grant: Individual fellowship Marie Sklodowska-Curie Actions (2015)
Postdoctoral Grant: Research in Paris (2012)
Predoctoral Grant: JAE Predoc (2007)
Student Fellowship: Collaboration Grant (2006)

SCIENTIFIC PUBLICATIONS
The candidate has published 24 ISI-indexed articles (9 as 1st author, 12 without his PhD supervisor), 1 book chapter (1st author) and 3 patents (1 granted and 2 registered). His work has received 538 citations (WOS), with an h-index of 12 (WOS). Importantly, he is the 1st author of 2 Nature Nanotechnology, 2 Nano letters, 1 Physical Review Letters and 1 Nature Communication articles, among others.

CONFERENCES AND SEMINARS
His scientific work has been presented in over 100 international conferences, workshops and seminars. The candidate has participated in over 30 national and international conferences (24 oral presentations and 10 posters). Importantly, he has been invited 6 times to international conferences:
Lasers in Micro, Nano and Bio Systems. Gordon Research Conference (2018)
International Multidisciplinary Conference on Optofluidics (2016 and 2017)
International Conference on Metamaterials, Photonic Crystals and Plasmonics (2017)
International Conference on Current Trends in Mass Spectrometry (2016)
International Workshop on Nanomechanical Sensors (2012)
In addition, the researcher has been invited to give 8 seminars on different universities and scientific research centres all over the World.

R&D PROJECTS
Participation in over 15 national and international projects including 3 ERC project and 1 Fet-project. Importantly, he is currently the principal investigator of a ComFuturo Project. In addition, he has been the principal investigator of a Marie Sklodowska Curie Action Individual Fellowship.

RESEARCH IN INTERNATIONAL CENTERS
Materials and Quantum Phenomena Laboratory, Université Paris Diderot , France. Feb 2013- Oct 2016
Nanotech Laboratory, Technical University of Denmark, Denmark. Apr 2010- Jul 2010

SUPERVISION AND MENTORING
Currently supervising a PhD student: Juan Molina Fernandez (3th year)
Supervised 4 master and graduate students

EVALUATOR/EDITOR/REVIEWER
Evaluator of Marie Sklodowska Curie Actions Individual Fellowship 2019
Guess Editor in the special issue Optomechanical Sensors in the ISI journal Sensors
Usual reviewer of several ISI journals such as Journal of Applied Physics, Physical Review B and Optics Express...

TECHNOLOGICAL KNOWLEGMENT TRANSFER
Collaboration with the technological companies Mecwins S.A. and NanoDreams S.L

OUTREACH ACTIVITIES
Usual participant in many dissemination activities

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA ESTATAL DE INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: HERRANZ ARRIBAS, LUIS
Referencia: RYC2019-027020-I
Área Temática: **Tecnologías de la información y de las comunicaciones**
Correo Electrónico: lherranz@cvc.uab.es

Título:

Multimodal deep learning applied to computer vision and multimedia

Resumen de la Memoria:

The scientific career of Luis Herranz is diverse and multidisciplinary, evolving from applied research in multimedia to both fundamental and applied research in computer vision and machine learning. One common is the processing and understanding of visual and content.

His PhD research at UAM was motivated by the challenges of browsing and navigating large collections of video content, on the one hand, and the challenges to deliver adapted video streams suitable for the particular terminal and network. These two challenges are addressed by video summarization and video adaptation respectively. The thesis main contribution is an integrated approach of summarization and adaptation. The second main contribution is the concept of scalable summary. The Thesis was awarded an Extraordinary PhD award, and a COIT Best PhD thesis award. After the thesis he engages in industrial research for roughly one year, working for Mitsubishi Electric R&D.

Dr. Herranz was awarded a CAS Young Scientist fellowship and joined ICT-CAS, in Beijing. While intitally continuing his work on scalable summaries he became interested in computer vision and machine learning, and in particular the emerging field of deep learning, and shifted towards more fundamental problems requiring understanding of the visual information. During these period he contributed to diverse problems such as scene recognition, contextual recognition of food images and ingredient and recipe analysis, and multimodal RGB-D understanding, using the tools of deep learning and deep representations, and published in higher impact venues such as CVPR and IEEE Trans. on Multimedia. He was also awarded four NSFC projects as principal investigator and three more CAS postdoctoral fellowships to continue his research. He also co-supervised a PhD student.

The researcher joined the Learning and Processing group of CVC at Barcelona thanks to a Marie-Curie COFUND fellowship. He worked in a CHIS-ERA project (M2CR) which involved multimodal representations, this time images and text. During this period he contributed to fields such as continual learning and deep image compression. Another important development at the time were generative adversarial networks (GANs) which provided a principled way to address many problems involving the learning of complex image distributions. Dr. Herranz has contributed also to this area in the particular poblems of image generation and image-to-image translation. These works have been published in top computer vision, machine learning and artificial intelligence venues such as CVPR, NeuRIPS, AAAI, ICCV, IJCV, IEEE Trans. on Image Processing. During this stage Dr. Herranz has also became involved in numerous technology transfer projects, in particular related with continual learning and deep image compression in autonomous driving scenarios, which gave him the opportunity to collaborate with other researchers and industry from that field. He has also been the PI of a national project and technology transfer project.

In summary, his current research has evolved to more fundamental problems in visual and multimodal understanding, combined with image generation and continual learning, which are cases where humans are still much better than machines. At the same time he is also interested in their application to practical problems.
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Resumen del Currículum Vitae:

EDUCATION
2010 PhD in Computer Science and Telecommunications, Universidad Autónoma de Madrid. Extraordinary Ph.D award from UAM, Best Ph.D thesis in Applications for Multimedia Environments from COIT.
2003 Telecommunications Engineer, Universidad Politécnica de Madrid. Best degree thesis (Proyecto de Fin de Carrera) in Applications for Multimedia Environments

POSITIONS
Mar. 2017 present. Marie-Curie Postdoctoral Fellow, Computer Vision Center, UAB
Jan. 2017 Mar-2017 Postdoctoral researcher. Computer Vision Center, UAB
Feb. 2012 Sep. 2016. CAS Postdoctoral Fellow, Institute of Computing Technology, CAS.
Jul. 2010 Apr. 2011. Research intern, Mitsubishi Electric R&D Centre Europe, UK
Apr. 2005 Apr. 2010. Teaching Assistant (Ayudante), Universidad Autónoma de Madrid
Feb. 2004 Apr. 2005. Research Assistant, Universidad Autónoma de Madrid

Sep. 2002- Mar. 2003. Intern, Catedra Telefónica UPM, Universidad Politécnica de Madrid.

PUBLICATIONS
h-index: 16, i10-index: 26 (Google Scholar)
Citations: 697. Last 5 years: 112 citations/year. Last year (2019): 282 (Google Scholar).
ISI-JCR journals: 20, Q1: 9, D1 (top 10%): 7
Top conferences (CORE ranking A* and A): 10, including the major conferences in computer vision (CVPR, ICCV, ECCV), artificial intelligence (NeurIPS, AAAI, IJCAI) and multimedia (ACM Multimedia).
Total publications: 64 (21 journals, 42 conferences, 1 book chapter).
Other: research webpage (www.lherranz.org) and blog, 3 datasets publicly available.

R&D PROJECTS AND TECHNOLOGY TRANSFER

Postdoctoral fellowships: 3 (CAS Young Scientist, CAS PIFI, 1 Marie-Curie).
Participation in research projects 21 (13 public calls + 8 technology transfer). 5 projects as PI (5 national, 2 industry).

SERVICES
Technical program committees: CVPR, ICCV, ECCV, ACM Multimedia, BMVC
Organization of R&D activities: Area chair (ICME 2018, ACM Multimedia Asia 2019), local chair (ICIMCS), Guest editor of two special issues (MTAP)

AWARDS
CAS International Cooperation Award for Young Scientists 2013, Chinese Academy of Sciences
Extraordinary Ph.D award 2010/2011, Universidad Autónoma de Madrid, 2013.
Best Ph.D thesis of 2010-2011 on Applications in Multimedia Environments, Colegio Oficial de Ingenieros de Telecomunicación, 2011.
Best degree thesis of 2002-2003 on Telecommunication Networks and Services, Colegio Oficial de Ingenieros de Telecomunicación, 2003.

SHORT STAYS
University of Surrey, 4 months, 2009
Queen Mary University of London, 4 months, 2005

During his degree thesis at the Universidad Politécnica de Madrid (UPM), the candidate studied the problem of adapting multimedia content to heterogeneous terminals (e.g. mobile, TV set) and networks (e.g. broadband, GSM) using MPEG-7 and MPEG-21 standards.

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: GERACI , GIOVANNI
Referencia: RYC2019-026846-I
Área Temática: **Tecnologías de la información y de las comunicaciones**
Correo Electrónico: dr.giovanni.geraci@gmail.com

Título:

Wireless Communications, Networking, and Signal Processing

Resumen de la Memoria:

In the last four years, spent between Nokia Bell Labs and Universitat Pompeu Fabra, I have made outstanding contributions to my field, in terms of both theoretical research and results with strong commercial impact. My scientific output includes 12 patent families, 3 book chapters, 23 IEEE journals, 30 IEEE conference papers, 1 edited book for Wiley in preparation, and 2 IEEE journals under review. These have received a total of 1510 citations, with h-index of 17. For my promising research activities for the benefit of the society, I was honored with the 2018 IEEE ComSoc Outstanding Researcher Award for Europe, Middle-East, and Africa.

Drone Communications: I took a leap forward in solving the cellular operators dilemma as to what it will take to realize 5G-connected drones, without jeopardizing terrestrial users. Through 3GPP standard-compliant simulations, I identified appropriate infrastructure and signal-processing upgrades for both operators and drone manufacturers. My findings provide essential guidelines to achieve reliable drone command and control through the network, enabling applications with large social impact. On this topic, I have co-chaired international workshops, delivered invited talks and tutorials, and received a Best Paper Award.

Unlicensed Spectrum Access: I pioneered Massive MIMO Unlicensed , a novel technique to enhance Wi-Fi performance and efficiency, and provide support for high-capacity and low-latency applications. By exploiting the spatial awareness provided by a large number of antennas, Massive MIMO Unlicensed results in a capacity boost for the nodes that implement it, as well as in increased channel access opportunities for all other nodes. My contributions are now having an impact on the development and specification of next-generation Wi-Fi, IEEE 802.11be. On this topic, I have co-chaired an international workshop and delivered invited talks and tutorials.

Wireless Physical-Layer Security: Unlike cryptographic techniques, physical layer security is identified as a promising strategy to degrade the signal quality at unauthorized receivers, preventing them from acquiring confidential information. I extended the notion of physical layer security to multi-antenna multi-user cellular systems, and proposed low-complexity transmission schemes that achieve large secrecy rates. On this topic, I delivered invited talks, I received a best poster award and a runner-up paper award, and I co-authored a paper that has been cited over 500 times.

My work on 5G-and-beyond communications has also resulted in 12 filed inventions. Among them, the patents related to Massive MIMO Unlicensed are of particular significance. My contributions have helped Nokia strengthen its intellectual property portfolio in key strategic areas and secure growth in new specific business lines and products.

I played a key role in proposing the European project PAINLESS , granted total funding of over 4 million. This project is providing the necessary resources to deliver technologies and solutions within Nokia s strategic research agenda on autonomous robot management. I also led the research on Drone Communications at Nokia Bell Labs Ireland, interfacing my team with Nokia s 3GPP standard delegates. For my thought leadership in this field, I was awarded the Nokia Bell Labs Ireland Certificate of Outstanding Achievement in 2017.
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Resumen del Currículum Vitae:

I hold a prestigious la Caixa Junior Leader Fellowship at Universitat Pompeu Fabra (Spain). I gained industrial experience at Nokia Bell Labs (Ireland), working as a Research Scientist in 2016 2018. I also held research appointments at the Singapore University of Technology and Design (Singapore) in 2014 2015, the University of Texas at Austin (USA) in 2013, CentraleSupélec (France) in 2012, and Alcatel-Lucent (Italy) in 2009. I earned a Ph.D. from the University of New South Wales (Australia) in 2014.

I have an emerging international reputation in the field of wireless communications and networking. I have co-authored 50+ IEEE scientific articles attracting 1500+ citations, I am co-inventor of a dozen patent families, and I received the Best Paper Award at IEEE PIMRC 19. In 2018, I was honored with the IEEE ComSoc Outstanding Young Researcher Award for EMEA Region, which is given to the top-three researchers of any nationality working across Europe, Middle East, and Africa.

I am deeply involved in the international research community. I have been serving as an editor for the IEEE Transactions on Wireless Communications and IEEE Communications Letters, and as a workshop co-chair at IEEE Globecom 17, Asilomar 18, IEEE ICC 19, and IEEE ICC 20. I am a frequent speaker and have delivered a workshop keynote at IEEE PIMRC 18, an industry seminar at IEEE ICC 19, tutorials at

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

IEEE WCNC 18, IEEE ICC 18, IEEE Globecom 18, and IEEE PIMRC 19, as well as numerous invited lectures.

For my leadership, vision, and ability to define research projects, I have been the recipient of competitive grants, covering ten years of research for a total of nearly one million euros. At Nokia, I secured funding within the H2020-MSCA-ITN. At Universitat Pompeu Fabra, I acquired leadership and management skills as the principal investigator or two research projects.

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: SANTOS RODRIGUEZ, PATRICIA
Referencia: RYC2019-028203-I
Área Temática: **Tecnologías de la información y de las comunicaciones**
Correo Electrónico: patricia.santos@upf.edu

Título:

Human Computer Interaction in Technology-Enhanced Learning, with special focus on how the knowledge, methods and techniques from the design field can be applied to develop new smart learning environments.

Resumen de la Memoria:

I have consistently positioned my research line in the field of Technology-Enhanced Learning (TEL) with a focus on Human Computer Interaction (HCI), User-centered design (UCD) and Learning Design (LD).
Technology Enhanced Learning (TEL) is an intrinsically interdisciplinary field comprising research topics that concern engineering, computer science and social sciences (see for example the ACM Taxonomy for Learning Technologies).

World-leading authors in the area of TEL have claimed that a re-conceptualization of educational theories must be undertaken in order to develop an approach for the present and future of Learning Designs. The use of innovative computing technologies enables technicians and practitioners to rethink learning, teaching and assessment strategies. Consequently, the derived design principles for designing smart learning environments and activities should be based on different factors than the ones considered for traditional learning.

In general, Design has been a topic of interest in education for many years. Design implies a systematic conception and planning process taking place prior to the development of something, or prior to the execution of some plan, in order to solve a problem. The notion of Learning Design has also been explored, focusing on ways of representing teachers pedagogical ideas (e.g., unit of learning, course, or sequence of tasks) in a standard format interpretable by computers, able to be shared and reused. Interestingly, most of previous approaches have focused on design as the creation of a representation for a learning situation (commonly called as the conceptualization stage), rather than looking at the whole learning design life cycle. There is a lack of understanding about how other artifacts evolve during the design process, and therefore, how learning designers can be supported in the transitions between the different stages of the process such as the authoring or the enactment and monitoring of the learning activity.

Based on this, the motivation of my research line lies on: Supporting learning with technology is becoming more relevant as a reconceptualization of educational theories/practices is needed in order to support the 21st century skills of learners in education. Education moves towards the consideration of learning design as a process, or even of teaching as a design practice. Transitions or discontinuities in the process of learning design can generate issues for both designers, and the products of design. Some examples are the necessity of re-creating design artifacts with different technologies. Understanding the role of design artifacts and their evolution in supporting design during the different stages of the learning design process will enable a provision of better support for practitioners.

I have publications with 77 international researchers, see: https://dblp.org/pers/hd/s/Santos:Patricia. I have worked in R+D+I projects with academic and industry partners across different countries in Europe (Germany, UK, France, Italy, Netherlands, Greece, Austria, Belgium, Norway, Finland, Romania, Denmark, Cyprus, Bulgaria, Lithuania, Estonia, Portugal) and other countries such as Chile and Israel.

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Resumen del Currículum Vitae:

Throughout my professional career, the quality and innovativeness of my work has been recognized with many awards and publications. I have consistently positioned my research in the field of Technology-Enhanced Learning with a focus on Human Computer Interaction and Learning Design.

In 2011 I obtained my PhD with an Excellent Summa Cum Laude (Best Phd Thesis Award Potential for transference, UPF Board of Trustees).

From 2013 to 2016 I was a full-time post-doc researcher, at the University of the West of England (UK), with a career interruption in 2015 due to maternity leave.

My research career has been developed in the context of competitive and multidisciplinary international research projects. I have publications with 77 international researchers, see: https://dblp.org/pers/hd/s/Santos:Patricia. Relevant past projects are: Learning Layers funded by the EU FP7 program with 12 Million EURO (workpackage co-lead); TENCompetence funded by the EU FP6 program with 13,5 Million EURO (task leader).

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Since 2017, I am a senior member of the Interactive and Distributed Technologies for Education (UPF). In 2019, I have generated grant funding of more than 2,5 Million EURO in total (300000 EURO assigned to UPF) for European projects that I actively contributed to wrote proposals for.

I am currently project manager and research leader of the D-TIPS Erasmus+ project (budget: 225000 EURO). Workpackage leader of two projects: CS-Track H2020 (budget: 2,2 Million EURO) and Courage Volkswagen Foundation (budget: 1,5 Million EURO). Task leader of TROMPA H2020 (budget: 3 Million EURO).
I have been involved in the design and development of diverse learning technologies, main ones are: Questinsitu: an authoring tool and mobile app for assessment in situ (finalist of the 13th BDigital Global Congress); TenCompetence LD Toolkit (IMS award); ILDE+ Makers a les Aules: a LD community platform for Maker activities; Empatheia: an online game to support Design Thinking in primary schools;

The following indicators show the scientific quality of my research:

PhD Thesis co-supervised: 3 (under supervision)
Master Thesis co-supervised: 4 (3 under supervision),
Total citation: 775-G.Scholar, 217-WoS, 298-Scopus
Average citation/year (since 2012 / 8 years / total: 194 citations): 24,25-Scopus
JCR Articles: 14 JCR (11 in Q1) published, and 4 JCR (4 in Q1) under review
h Index: 15-G.Scholar, 9-WoS, 9-Scopus
Co-Author: 77 co-author collaborations

I have also relevant teaching and mentoring experience in Engineering studies (supervising 3 PhD, 3 Master thesis and 1 Master thesis completed).

MINISTERIO
DE CIENCIA
E INNOVACIÓN

AGENCIA
ESTATAL DE
INVESTIGACIÓN

AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: FALOMIR LLANSOLA, ZOE
Referencia: RYC2019-027177-I
Área Temática: **Tecnologías de la información y de las comunicaciones**
Correo Electrónico: zfalomir@gmail.com

Título:

Cognitive Qualitative Descriptors and Applications in Robotics, Ambient Intelligence and Education

Resumen de la Memoria:

I got my joint PhD with honors at U. Jaume I, Spain, and at U. Bremen, Germany. Then I spent 7 years as a postdoctoral researcher at Bremen Spatial Cognition Centre (BSCC) where I funded my position gaining 3 projects as principal investigator in competitive open calls (Marie Curie IEF and Excellent Initiatives at University of Bremen).

My research expertise lies on Qualitative Spatio-Temporal Reasoning (QSTR) applied to robotics and to ambient intelligent systems. Recently I lead a new research line on defining qualitative models for solving spatial reasoning challenges to help people to improve their spatial cognition skills. Through all my research experience, I developed a pluridisciplinary background which, apart from Qualitative Reasoning, Knowledge Representation techniques and Human-Machine Interaction, also includes Machine Learning, Colour Cognition, Bioinformatics, Geographic Information Systems and Creative and Spatial Problem Solving.

The excellent scientific quality of my work is shown by: (i) 33 publications in JCR highly ranked journals; (ii) h-index: 9 by WoS; 12 by Scopus; 15 by GoogleScholar; (iii) awards: extraordinary PhD award, City of Castellón Award, junior fellowship at HWK-IAS, YERUN award, etc., and (iv) scientific fund-raising for 3 German, 5 Spanish and 3 EU research projects (total funding raised 332,700, 264,104 and 503,310, respectively), I was principal investigator in 3 projects (total funds 485,468).

My expertise is trusted in my research area shown by my participation in scientific program committees at the most relevant conferences in my field (IJCAI, AAAI and ECAI), in review boards for DAAD, CONACYT, etc. And I have international visibility which is shown through: (i)keynotes and invited talks (MDAI 18, SC&AI 19, DySket-KogWis 16, U. Osnabrück); (ii)being co-chair at international conferences and workshops (QR 20- 18, CCIA 18, ProSocrates 16- 17); (iii)serving as guest editor in 5 special issues for JCR-indexed journals and as associated editor of the journal Cognitive Systems Research.

I focused to transfer the results of my research to industry and society. This is shown by my contracts with industry (Cognitive Robotis SL) and by free licensed software to provide people with tools to train their spatial cognition skills.
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Resumen del Currículum Vitae:

Zoe Falomir obtained her joint Phd (2011, highest honors) in Computer Science from the University Jaume I, Castellón, Spain and from the University of Bremen, Germany. She worked for 5 years as a research and teaching assistant at University Jaume I, Castellón, Spain (2005 2010) after winning a competitive fellowship by Generalitat Valenciana (Spain). She also transferred results of her research to the industry working in an ECHORD European project at the enterprise Cognitive Robots SL, Spain (2010-2011). She worked also 7 years as a postdoctoral researcher at University of Bremen (2012-2019) where she won positions after open competition: she held a European Marie Curie IEF fellowship (2013-2015), and 2 Excellent Initiative post-doc fellowships from U. Bremen (2012-2013; 2015-2019).
Her research interests lie within the fields of knowledge representation, qualitative reasoning, cognitive systems and spatial cognition. Zoe published 33 articles in JCR journals (5 Q1 and 10 Q2 journals; 19 as first author), 2 books, 5 proceedings books, 19 book chapters and more than 50 papers in conferences (21 indexed in the WoS). Zoe s h-index is: 9 (WoS), 12 (Scopus), 15 (GoogleScholar). Her research has received awards such as: extraordinary PhD award at U. Jaume I, the City of Castellón Award, the junior fellowship at HWK-IAS, the YERUN award, etc.
Zoe Falomir was co-Chair for the international venues QR 20- 18, CCIA 18, ProSocrates 16- 17, and was local organizer at CCIA 17 and KogWis 16. She edited 5 proceedings and 5 special issues for JCR-indexed journals. She was PC member of 30+ workshops and conferences (including IJCAI, AAAI and ECAI), and reviewer of 20+ JCR-ranked journals.
She also gave 2 keynote talks: at MDAI 18 international conference and at SC&AI 19 international workshop. She also gave 2 invited talks: at U. Osnabrück, Institute of Cognitive Science and at DySket-KogWis 16 workshop.
Zoe cooperated in scientific fund-raising for 3 German, 5 Spanish and 3 EU research projects (total funding raised 332,700, 264,104 and 503,310, respectively). Among them, she was principal investigator in 3 projects (total funds raised 485,468).
Zoe is currently co-director of 1 PhD thesis at U. Sevilla. She was advisor of 4 PhD thesis at U. Bremen, jury member for 3 PhD thesis, external reviewer for 3 PhD thesis, director of 5 master thesis and supervisor of 12 research internships.
More details at: https://sites.google.com/site/zfalomir/ and at Twitter: @zfalomir

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AYUDAS RAMÓN Y CAJAL
CONVOCATORIA 2019

Turno de acceso general

Nombre: RAMOS AMIGO, RAFAEL ENRIQUE
Referencia: RYC2019-026915-I
Área Temática: **Tecnologías de la información y de las comunicaciones**
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Título:

Thin film oxide nanosctructures for information, logic and energy management

Resumen de la Memoria:

During his first research period (2004-2012), Dr. Ramos worked on magnetotransport studies of epitaxial films of half-metallic oxides (HMO), these are materials with 100 % spin polarization at the Fermi level, and therefore highly interesting for spintronics due to their potential to achieve more efficient magnetic control of their resistive state, with posible applications in memory/logic devices.
The acquired knowledge led to the opportunity to move to Prof. Ibarra s group at INA to start his second research period (2012-2015), where he focused on studies of termal generation of spin currents in HMOs using the recently discovered spin Seebeck effect (SSE), in collaboration with the groups of Prof. Saitoh and Prof. S. Maekawa. As a result of this collaboration it was discovered that by using stacks of (oxide/metal) multilayer structures the SSE increases, both its thermoelectric conversión efficiency and extractable power are greatly enhanced, with a two order-of-magnitude increase in the extractable thermoelectric power of the multilayer device, compared to a basic oxide/metal bilayer structure.
He then joined the Advanced Institute for Materials Research at Tohoku University (2015-present) to actively participate in Prof. Saitoh s ERATO, where he partly continued the previous work on multilayers and further expanded to other studies on spin current generation/manipulation in magnetic oxides, not only as a result of the termal excitation but also using resonant excitation of the spin degree of freedom in ferromagnets and the study of materials with other types of magnetic order (i.e. ferrimagnets, antiferromagnets). He recently study of the role of the spin-lattice coupling in the spin current generation and manipulation process, discovering a record enhancement of the SSE due to magnon-phonon resosnance. This opens an exciting prospect for the study of heat rectification effects by spin currents and related to the emerging fields of magnonics and phononics.
Dr. Rafael Ramos also currently participates as a Principal Investigator (PI) in the SPICOLOST, RISE Project coordinated by Prof. M.H. Aguirre, and interested to further study the spin current generation and manipulation using insulating materials (i.e: ferrimagnetic, antiferromagnetic and multiferroic oxides), due to the potential for information transport or energy conversion without the mediation of free carriers, and therefore lower energy dissipation losses. Moreover, oxides have the potential for multifunctional capabilities, due to strong interaction between degrees of freedom (i.e. spin-lattice as mentioned above), which can possibly lead to new physics with posible new functionalities. In the long term, these studies could lead to energy harvesting or information processing applications in nanoelectronic devices.

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Resumen del Currículum Vitae:

After obtaining his BSc degree at the University of Santiago de Compostela, Rafael Ramos moved to Ireland where he was awarded a Research Studentship by Trinity College Dublin to pursue his graduate studies, during this time he supervised undergraduate laboratory students in the period from 2006 to 2007. Since he finished his PhD, Dr Rafael Ramos has held three different postdoc positions in Ireland, Spain and Japan. He has recently been promoted to Assistant Professor in the year 2018.
During his research career, Dr. Ramos has been involved in 5 national projects in Ireland, Spain and Japan and 2 European projects, one of which he is currently a principal investigator.
Through these years of research he has acquired a strong background in the Physics of Magnetic materials, specifically the spin current generation, manipulation and transport phenomena, with potential applications for information technologies and energy harvesting. This is evidenced by his track record with 37 scientific papers in peer-reviewed international journals with a total number of cites of 529 and an average citation of 90 cites/year in the period 2015-2019, having achieved 119 cites in the year 2019. He has also contributed to two chapters of books in prestigious editorials. His current h-index is 12.
He has also 29 contributions to international conferences, including 9 contributed talks and 11 invited talks. He has also been awarded the best poster presentation award at the 20th International Conference of Magnetism (ICM). This is a strong indication of the impact of his research.
He is currently memeber of the Japanese Society of Applied Physics and referee of five international academic journals.
Moreover, since he started his PhD studies, he has acquired extensive hands-on experience on various experimental techniques which are required in the subject of his research; from nanometer thin film deposition, structural, magnetic and transport characterization to fabrication of nanometer-sized lateral devices. He has also helped in the co-supervision of graduate students at the different laboratories where he worked, therefore he is also in a strong position to transfer his knowledge and support to other researchers collaborating with him (from other institutions or PhD students from his lab), as evidenced by previous and ongoing successful collaborations, described elsewhere.

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Turno de acceso general

He also has extensive experience in many different research environments, as strongly evidenced by the fact that most of his research career has been spent abroad, with only 3 years of research in Spain from a total of 15 years since he started his PhD studies, having spent mainly two research periods in Ireland (~ 8 years) and Japan (~ 5 years). This proves his capacity for mobility and strong ability to adapt to changes and different environments.