

**Institute of Smart Cities Data Center  
Universidad Pública de Navarra**

**Fecha / Date / Noiz:** April 4, 5 & 6 (9h00 - 19h00)

**Lugar / Location / Lekua:** Edificio Jerónimo de Ayanz, Campus Arrosadía

**Registration (compulsory):** <http://giara.unavarra.es/bigdata>

**Resumen / Abstract / Laburpena:**

The new scientific-technological models have already entered in our everyday life. Beyond all that we can imagine, data treatment is causing a revolution disease diagnosis and prediction; in the labour models (and not only in chain production); in the comprehension and explanation of our cultural and historical heritage and past; in transport (from autonomous driving to route designing...) or even in our everyday decisions as, for instance, what to buy or where to go in holidays, .

In this workshop, we focus on the theoretical and applied study of data processing for this revolution which has already arrived. In particular, our interest is devoted to applications in industry, health, cultural heritage and tourism.

This workshop is held under the financing agreement signed between the Public University of Navarra and the Obra Social La Caixa - CAN Foundation.

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**Program for April, 4:**

- 9h00-9h20 **Opening**  
Alfonso Carlosena, *Rector at Public University of Navarra*  
Ignacio R. Matías, *Head of the ISC*  
Manuel Ayerdi Economical, *Vicepresident of the Government of Navarra*  
Humberto Bustince, *Main researcher GIARA group*
- 9h30-10h15 **Directional Monotonicity for Data Aggregation in Data Mining**  
Humberto Bustince & Graçaliz Dimuro, *ISC, Public university of Navarra*
- 10h15-11h00 **An introduction to Big Data**  
Amparo Alonso, *A Coruña University*
- 11h00-11h15 **Coffee Break**
- 11h15-11h45 **CHI Algorithm in Big Data**  
M. Elkano, M. Galar, J. A. Sanz, G. Lucca, *ISC, Giara, Public University of Navarra*
- 11h45-12h30 **Problems of the Choquet Integral in Big data**  
Graçaliz Dimuro & Humberto Bustince, *ISC, Public university of Navarra*
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- 14h25-14h30 **Afternoon Session Opening**  
Humberto Bustince, *Main researcher GIARA group*
- 14h30-14h15 **A Theoretical Review of the Choquet Integral and Related Concepts**  
Radko Mesiar, *Slovak University of Technology in Bratislava*
- 15h15-15h45 **On the Elaboration of Synthetic Indexes and Data Visualization**  
Javier Montero, *Complutense University of Madrid*
- 15h45-16h15 **Process Capability for Attribute Data**  
Susana Montes, *University of Oviedo*
- 16h15-16h30 **Coffee Break**
- 16h30-17h15 **Fusion Functions: Recent Developments**  
L. De Miguel, D. Paternain, M. Sesma-Sara, *ISC, Giara, Public University of Navarra*
- 17h15-19h00 **Open Problem Discussion**
- 19h15 **Closure**

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**Applications: Industry and Health**

**Program for April, 5:**

- 9h15-9h30 **Opening**  
Ramón Gonzalo, *Research Vicerrector at Public University of Navarra*  
Humberto Bustince, *Main researcher GIARA group*
- 9h30-10h30 **Towards Online Adaptive Ambient Intelligent Buildings for Multiple Occupants**  
Hani Hagrass, *University of Essex (UK)*
- 10h30-11h30 **Deep Learning and Autonomous Driving**  
David Vázquez, *Universitat Autònoma de Barcelona*
- 11h30-11h45 **Coffee Break**
- 11h45-13h15 **Applications by Companies**  
Three different approaches
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- 15h25-15h30 **Afternoon Session Opening**  
Humberto Bustince, *Main researcher GIARA group*
- 15h30-16h30 **Data in Health Problems**  
Tomás Belzunegui, *Hospital de Navarra*  
Jose Antonio Sanz, *ISC, Giara Group, Public University of Navarra*
- 16h30-17h00 **Research Project on Polimedication**  
Javier Gorricho, *Regional Public Health Service*  
Mikel Uriz, Mikel Galar, *ISC, Giara Group, Public University of Navarra*
- 17h00-17h15 **Deep Learning for Hearing Aid**  
Mikel Elkano, *ISC, Giara Group, Public University of Navarra*
- 17h15-17h30 **Coffee Break**
- 17h30-19h15 **Open Session: Introducción a la Computación Cuántica**  
Jesús García López de la Calle, *Polytechnic University of Madrid*  
Sesión en Castellano, no se require conocimientos previos  
Lugar: Aula 09 (Aulario - UPNA)
- 19h15 **Closure**

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**Applications: Historical Heritage and Data**

**Program for April, 6:**

- 9h45-10h00 **Opening**  
Maitena Ezkutari, *General Direction of Tourism of the Government of Navarra*  
Humberto Bustince, *Main researcher GIARA group*
- 10h00-11h00 **Cultural Heritage in Navarra and Big Data**  
Alfredo Asiain, *Public University of Navarra*
- 11h00-11h30 **Presentation of the Database for Heritage in Navarra**  
C. Marco-Detchart, C. Guerra, S. Sada, J. Sanz, *ISC, Giara Group, Public Univ. of Navarra*
- 11h30-11h45 **Coffee Break**
- 11h45-12h15 **Criteria for the Analysis of the Heritage Signage**  
Isabel Merino, *Public University of Navarra- Spain*
- 12h15-12h45 **Best Practices by Companies**  
Different cases
- 12h45-13h45 **Science and Data**  
Joaquín Sevilla, *Scientific Disclosure, Public University of Navarra*  
Javier Armentia, *Pamplona Planetarium*
- 13h45 **Closure, peritif & Networking**  
*Talks on April 6 will be given in Spanish*

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## Annexes: Short Speakers' Bio

### Amparo Alonso-Betanzos

Amparo Alonso-Betanzos received the graduated degree in chemical engineering from the University of Santiago, Spain, in 1984, the MS degree in monitoring and control of biomedical signals from the Department of Applied Physics, Santiago de Compostela, Spain, in 1985, and the PhD degree (cum laude and premio extraordinario) in the area of medical expert systems in 1988. From 1988 to 1990, she was a postdoctoral fellow in the Department of Biomedical Engineering Research, Medical College of Georgia, Augusta. She is currently a full professor in the Department of Computer Science, University of A Coruña, Spain. Her main research interests include hybrid intelligent systems, intelligent multi-agent systems, linear optimization methods, and entropy-based cost functions for neural networks and functional networks. She is a senior member of the IEEE and the ACM.

### Graçaliz Pereira-Dimuro

Graçaliz Pereira Dimuro has obtained his undergraduate degree at Universidade Catolica de Pelotas (Brazil) and MSc and PhD degrees at the Instituto de Informtica of Universidade Federal do Rio Grande do Sul - UFRGS (Brazil). She is an Adjunct Professor at the Centro de Ciencias Computacionais of Universidade Federal do Rio Grande - FURG (Brazil), researcher of the Brazilian research funding agency CNPQ and she is currently a talent researcher at the Institute of Smart Cities of the Public University of Navarra, where he works on data mining and big data problems.

### Radko Mesiar

Radko Mesiar is head of the Department of Mathematics at Faculty of Civil Engineering, STU Bratislava. Graduated at Comenius University, Faculty of Mathematics and Physics, in 1974, PhD at the same faculty obtained in 1979 with PhD thesis 'Subadditive martingale processes'. Since 1978 member of the Department of Mathematics at Faculty of Civil Engineering, STU Bratislava. DSc since 1996 (in Czech Republic, Academy of Sciences). Associate professor since 1983, full professor since 1998. Fellow member of Czech Academy of Sciences, Institute of Information and Automation, Praha (Czech Republic, since 1995) and of IRAFM, University of Ostrava (Czech Republic, since 2006). Co-author of two scientific monographs, 5 edited volumes and author of more than 200 papers in WoS journals. Founder and organizer of conferences FSTA and AGOP.

### Javier Montero

Javier Montero is Full Professor at Complutense University of Madrid. He has been leading research projects since 1987 and has published more than 80 contributions in JCR journals, mainly devoted to the theory and applications of fuzzy sets. He has served the fuzzy community as President of the European Society for Fuzzy Logic and Technologies (EUSFLAT) and as Vicepresident of the International Fuzzy Systems Association (IFSA). He has been also Dean of the Faculty of Mathematics and Vicerrector at his University.

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### Susana Montes

Susana Montes received the M.Sc degree in mathematics, option statistics and operational research, from the University of Valladolid, Spain, in 1993, and the Ph.D. degree from the University of Oviedo, Spain, in 1998 (cum laude). She received the Best Mathematics Ph.D. Thesis Award from the University of Oviedo. She is a Professor of Statistics and O.R. at the University of Oviedo, where she is the leader of the research group UNIMODE. She has several publications in international journals and communications in international conferences, and she is participating in several national and international projects at the moment, some of them led by her. She is Associate Editor of the Journal of Intelligent & Fuzzy Systems and the Electronic Journal of Applied Statistical Analysis. At present she is the treasurer of EUSFLAT.

### Hani Hagra

Hani Hagra is a Professor in the School of Computer Science and Electronic Engineering, Director of the Computational Intelligence Centre and the Head of the Fuzzy Systems Research Group in the University of Essex, UK. His major research interests are in computational intelligence, notably type-2 fuzzy systems, fuzzy logic, neural networks, genetic algorithms, and evolutionary computation. He has authored more than 300 papers in international journals, conferences and books. He is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE) and he is also a Fellow of the Institution of Engineering and Technology (IET (IEE)). His research has won numerous prestigious international awards where most recently he was awarded by the IEEE Computational Intelligence Society (CIS), the 2013 Outstanding Paper Award in the IEEE Transactions on Fuzzy Systems and he was also awarded the 2006 Outstanding Paper Award in the IEEE Transactions on Fuzzy Systems.

### David Vázquez

David Vázquez, received the BSc degree in Technical Systems Computer Science from UDC in 2006 with stages at UAM and URJC where he performed his final project on Face Recognition. In 2008 he received the BSc degree in Computer Science from UAB where he has done his final project on person and car detection in Intelligent Video Surveillance systems for the company Davantis, supervised by A.M. Lopez from UAB. He received his MSc on CV and AI at the CVC in 2009 doing his MSc thesis on the study of the effect of the distance in pedestrian detection, supervised by A.M. Lopez. Recently, he received the Phd on Informatics for his Thesis Domain Adaptation of Pedestrian Detection, supervised by A.M. Lopez at the UAB. He is an active member of the ADAS and an assistant professor at the Computer Science Department in the UAB.

### Jesús García López de la Calle

Associate professor at the Department of Applied Mathematics in the Universidad Politécnica of Madrid. Graduated in Physical Sciences and Mathematical Sciences at the Universidad Autónoma of Madrid, he got his Ph.D. in Computer Science in the Universidad Politécnica of Madrid. He is a member of the Research Group in Quantum Information and Computing at the same University, and his work has been devoted to problems in quantum cryptography and quantum computing.