

**Part A. PERSONAL INFORMATION**

CV date	12/01/2023
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First name	Alberto Jesús		
Family name	Molina Cantero		
Gender (*)		Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail	<a href="mailto:almolina@us.es">almolina@us.es</a>	URL Web	
Open Researcher and Contributor ID (ORCID) (*)			

**A.1. Current position**

Position	Titular de Universidad / Tenured Lecturer		
Initial date	15-05-2017		
Institution	Universidad de Sevilla		
Department/Center	Tecnología Electrónica	<a href="#">Escuela Técnica Superior de Ingeniería Informática</a>	
Country	España	Teleph. Number	+034954552787
Key words	Physiological Computing, Accesibility, Emotions, Rehabilitation, AAC		

**A.3. Education**

PhD, Licensed, Graduate	University/Country	Year
Doctor. UNIVERSIDAD DE SEVILLA	University of Seville, Spain	2010

**Part B. CV SUMMARY** (max. 5000 characters, including spaces)

Sexenios 2; latest granted in year: 2021 Directed thesis (last 10 years): 3 Total number of high-impact publications: 7Q1 +5Q2 h-index : 11 (Google Scholar) 8 (Scopus)	
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My research is focused on the area of health, assistive technology, and physiological computing, looking for the development of the new technological gadgets, algorithms or procedures that help enhance health, cognitive development, and communicative capabilities of people with disabilities. As can be seen in the relevant merits section, most of the papers, meetings and transfer items to society are related to these topics. Many of them have been supported by national, and regional granted research projects, along with contracts with private institutions, with a total budget that approximates 600K€. I was IP in a subproject of a national call in 2020: Augmentative Affective Interaction (AAI) in which several local institutions ASPACE (Sevillian Cerebral Palsy Association), Colegio San Roman (Junta de Andalucía) and two international centers (Fondazione Gnocchi -Italy- and University of Maryland Baltimore -USA-) participated in. Regarding access to a computer, several low-cost developments have been published. Some are based on detecting body residual movements with accelerometers [10], others on using physiological signals [2,4,6,9] or implementing optical or video-processing methods [6]. In the last years, my group started the research in detecting emotional recognition through physiological signals. Some works have also been published in this field [14,16,17,20]. The need of developing low-cost systems based on physiological signals, and that gather information coming from multiple sources, led to implementing a low-cost hardware platform [7,18], a library that allows a fast implementation of software applications in biomedical devices [8,18] and a framework for recording data [5]. These new developments have helped advance in the study of emotions through wearables elements [1,17] and in the way in how they can be used to improve the health of people with disabilities [3,11,13]. Currently, we are also using robots [12,15] for cognitive stimulation [19]. Several patents have been released for accessibility [22,23,26], mobility and cognitive enhancement [21], and stress detection. Regarding formation, I've been the advisor of three doctoral students whose dissertations were called: "Procesamiento y caracterización de bioseñales para su uso en interfaces de control y afectividad", Manuel Merino Monge, 2015; "Diseño de interfaces para la mejora del acceso a las tecnologías de personas con dificultades motrices", Rafael Cabrera Cabrera 2017; and "Adquisición y procesamiento de



señales fisiológicas y sus aplicaciones”, Juan A. Castro García, 2019. Excluding one PhD graduate student, all of them could continue in the University of Seville developing their own research in several subareas of computer engineering and health.

## **Part C. RELEVANT MERITS** (sorted by typology)

### **C.1. Publications** (see instructions)

[1] Journal paper: Castro García, Juan Antonio, Molina Cantero, Alberto Jesus, Gómez González, Isabel María, Lafuente Arroyo, Sergio, Merino Monge, Manuel: Towards Human Stress and Activity Recognition: A Review and a First Approach Based on Low-Cost Wearables. *En: Electronics*. 2022. Vol. 11. Pag. 155-185..

[2] Journal paper: Serrano Barroso, Almudena Guiomar, Siugzdaite, Roma, Guerrero, Jaime, Molina Cantero, Alberto Jesus, Gómez González, Isabel María, et. al.: Detecting Attention Levels in ADHD Children with a VideoGame and the Measurement of Brain Activity with aSingle-Channel BCI Headset. *En: Sensors*. 2021. Núm. 21.

[3] Journal paper: Molina Cantero, Alberto Jesus, Merino Monge, Manuel, Castro García, Juan Antonio, Pousada Garcia, Thais, Valenzuela Muñoz, David, et. al.: A Study on Physical Exercise and General Mobility in People with Cerebral Palsy: Health through Costless Routines. *En: International Journal of Environmental Research and Public Health*. 2021. Vol. 18. Pag. 1-22.

[4] Journal paper: Molina Cantero, Alberto Jesus, Castro García, Juan Antonio, Gomez Bravo, Fernando, López de Ahumada Gutierrez, Rafael, Jiménez Naharro, Raúl, et. al.: Controlling a Mouse Pointer with a Single-Channel EEG Sensor. *En: Sensors*. 2021. Vol. 16. Núm 21

[5] Journal paper: Merino Monge, Manuel, Molina Cantero, Alberto Jesus, Castro García, Juan Antonio, Gómez González, Isabel María: An Easy-to-use Multi-source Recording And Synchronization Software for Experimental Trials. *En: IEEE Access*. 2020. Pag. 1-17. 10.1109/Access.2020.3034770

[6] Journal paper. Molina-Cantero, Alberto Jesus; Lebrato, Clara; Merino-Monge, Manuel; Quesada, Roylan; Castro-García, Juan Antonio; Gómez-González, Isabel María. 2019. Communication Technologies Based on Voluntary Blinks: Assessment and Design. *IEEE Access*. 7, pp. 70770-70798.

[7] Journal paper. Castro-García, Juan Antonio; Molina-Cantero, Alberto Jesus; Merino-Monge, Manuel; Gómez-González, Isabel María. 2019. An Open-Source Hardware Acquisition Platform for Physiological Measurements. *IEEE Sensors Journal*. 19,

[8] Journal paper. Molina-Cantero, Alberto Jesus; Castro-García, Juan Antonio; Lebrato-vázquez, Clara; Gómez-González, Isabel María; Merino-Monge, Manuel. 2018. Real-Time Processing Library for Open-Source Hardware Biomedical Sensors. *Sensors*.

[9] Journal paper. Molina-Cantero, Alberto Jesus; Guerrero-cubero, Jaime; Gómez-González, Isabel María; Merino-Monge, Manuel; Silva-silva, Juan I.. 2017. Characterizing Computer Access Using a One-Channel EEG Wireless Sensor. *Sensors*.

[10] Journal paper. Molina-Cantero, Alberto Jesus; Guerrero-cubero, Jaime ; Gómez-González, Isabel María; Merino-Monge, Manuel. 2016. A New Multisensor Software Architecture for Movement Detection: Preliminary Study with People with Cerebral Palsy. *International Journal of Human-Computer Studies*. 97, pp. 45-57.

**C.2. Congress**, indicating the modality of their participation (invited conference, oral presentation, poster)



[11] Physiological Computing as a Facilitator for the Promotion of Physical Activity in People with Functional Diversity (poster) Lecco (Italy) 2022

[12] LIDAR Signature Based Node Detection and Classification in Graph Topological Maps for Indoor Navigation (oral) Lisboa 2022

[13] Promoting Physical Activity in People with Functional Diversity through a Multiplayer Musical Game (poster) A Coruña 2021

[14] Smart Bracelet for Emotional Enhancement in Children with Autism Spectrum Disorder. Comunicación en congreso. 4th XoveTIC Conference. (oral) A Coruña. 2021

[15] Controlling Robot Motion by Blinking Eyes: an Experience on Users Training (oral) Huelva 13/06/2019.

[16] A Preliminary Study about the Music Influence on EEG and ECG Signals (poster). Sevilla 19/09/2018.

[17] A Wearable System for Multisensory Stimulation Therapy for Children (oral). 06/05/2017.

[18] A hardware/software platform to acquire bioelectrical signals from multiple sources. A case study: using sustained attention to access a computer (oral). 27/07/2017.

[19] The role of small robots in designed play workshops in centers of adults with cerebral palsy (oral) . 13/07/2016.

[20] EEG feature variations under stress situations (póster). 25/08/2015.

**C.3. Research projects**, indicating your personal contribution. In the case of young researchers, indicate lines of research for which they have been responsible.

AIR4DP: Artificial Intelligence and Robotic Assistive Technology devices for Disabled People(AIR4DP). Proyecto coordinado por la Universidad de Alcalá de Henares. Convocatoria Proyecto Explora. Subproyecto AAI con PID2019-104323RB-C32, cuyo título es INTERACCION AFECTIVA AUMENTADA.. Año 2020.

ECO-AI. Inteligencia Artificial para el procesamiento de Imágenes Ecográficas. Entidad financiadora: Cátedra Telefónica. Año 2020.

Recursos educativos adaptados. Fundación Hergar. Rivera-Romero, Octavio (Universidad de Sevilla). 2012-2013. 2AIR4DP200 EUR. Investigador/a.

ASOCIACIONES DE PERSONAS CON DISCAPACIDAD. Rivera-Romero, Octavio (Universidad de Sevilla). 2010. 3000 EUR. Investigador/a.

SISTEMA ABIERTO Y FLEXIBLE APLICADO A LA MONITORIZACIÓN DE INDIVIDUOS. Medina-Rodríguez, Ana Verónica (Universidad de Sevilla). 2010. 1500 EUR. Investigador/a.

INTERFAZ MULTIMODAL INALÁMBRICA. Gómez-González, Isabel María (Universidad de Sevilla). 2009. 167623,68 EUR. Investigador/a.

ARTICA: APLICACIÓN DE REDES DE SENSORES INALÁMBRICAS Y TÉCNICAS DE INTELIGENCIA COMPUTACIONAL EN LA MONITORIZACIÓN AMBIENTAL. León-De Mora, Carlos (Universidad de Sevilla). 2008-2012. 317768 EUR. Investigador/a.



SISTEMAS EMPOTRADOS ABIERTOS DE UNIDADES TERMINALES PARA SISTEMAS DE CONTROL INDUSTRIAL. Bellido-Díaz, Manuel Jesus (Universidad de Sevilla). 2006-2009. 131000 EUR. Investigador/a.

**C.4. Contracts, technological or transfer merits**, Include patents and other industrial or intellectual property activities (contracts, licenses, agreements, etc.) in which you have collaborated. Indicate: a) the order of signature of authors; b) reference; c) title; d) priority countries; e) date; f) Entity and companies that exploit the patent or similar information, if any

TECNOCAI: TECNOLOGÍAS EFICIENTES E INTELIGENTES ORIENTADAS A LA SALUD Y AL CONFORT EN AMBIENTES INTERIORES. PROGRAMA CENIT (MINISTERIO DE INDUSTRIA). Gómez-González, Isabel María (Universidad de Sevilla). 2009-2011. 80000 EUR.

RED GENERAL DE POSICIONAMIENTO. 2007-2009. 0 EUR.

RED GENERAL DE POSICIONAMIENTO (RGP). GUADALTEL, S.A.. Gómez-González, Isabel María (Universidad de Sevilla). 2007-2009. 91722 EUR.

RED GENERAL DE POSICIONAMIENTO - RGP. 2007-2009. 22013,38 EUR.

#### **Patents:**

[21] Biscarri Triviño, Felix, Biscarri, Felix, Gallardo, Alejandro, Jaramillo, Juan Manuel, Molina Cantero, Francisco Javier: Plataforma de Desplazamiento Autónomo. Modelo de Utilidad, Propiedad industrial. Solicitud: 2021-12-23

[22] Molina Cantero, Alberto Jesus, Gómez González, Isabel María, Cabrera Cabrera, Rafael, Merino Monge, Manuel, Guerrero Cubero, Jaime, et. al.: Sistema de detección adaptativo de movimientos leves para personas con discapacidad. Patente de invención, Propiedad industrial. Solicitud: 2015-09-10

[23] Guerrero Cubero, Jaime, Molina Cantero, Alberto Jesus, Gómez González, Isabel María: NeuroSwitch. Otra modalidad de propiedad intelectual. Solicitud: 2015-02-19

[24] Molina Cantero, Alberto Jesus, Biscarri Triviño, Felix, Leal Diaz, Miguel Angel, Gomez Gutierrez, Alvaro Ariel: Caudalímetro térmico para líquidos. Patente de invención, Propiedad industrial. Solicitud: 2012-12-11

[25] Merino Monge, Manuel, Gómez González, Isabel María, Molina Cantero, Alberto Jesus, Rivera Romero, Octavio: 4 CLISS: 4 Cognitive Load Increase Stress. Otra modalidad de propiedad intelectual. Solicitud: 2011-12-01

[26] Molina Cantero, Alberto Jesus, Gómez González, Isabel María: Sistema de Acceso a un Ordenador Basado en Guiños Voluntarios. Patente de invención, Propiedad industrial. Solicitud: 2006-06-29