Melani Sánchez García

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Universidad de Zaragoza https://mesangar.github.io/

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46702 Valencia, Spain

INTERESTS AND OBJECTIVES

My main area of interest lies on Computer Vision and Deep Learning. I am particularly excited about designing future visual implants for people with visual disabilities using Artificial Intelligence (AI) and Virtual Reality. However, I am open to applying this AI knowledge in other areas as it is the future of technology.

EDUCATIONAL BACKGROUND

PhD studies in Computer Vision Oct 2017 - present

Computer Science and Systems Engineering Dept.,

Universidad de Zaragoza – Spain

Advisors: Dr. Jose Jesús Guerrero Campo and Dr. Rubén Martínez Cantín

Thesis title: "Egocentric Computer Vision and Machine Learning for Simulated Prosthetic Vision"

Teaching Sep 2020 - Dic 2020

Master of Engineering in Industrial Engineering

Subject of Visión y Robótica

Universidad de Zaragoza – Spain

Teaching Feb 2019 - April 2019

Master of Engineering in Industrial Engineering

Subject of Representación gráfica del patrimonio

Universidad de Zaragoza – Spain

Summer School on Computer Vision (BMVA 2018) July 2018

Norwich - UK

Subject of Vision and Robotics Sep 2017 - Jan 2018

Master of Engineering in Industrial Engineering

Universidad de Zaragoza – Spain

Advisors: Dr. Jose Jesús Guerrero Campo and Dr. Gonzalo López Nicolás

Master of Chemical Engineering Sep 2015 - May 2017

Universitat de València – Spain

Master's degree final project title: "Elimination of a representative VOC by total oxidation using catalysts"

Advisor: Dr. Benjamín E. Solsona Espriu

Bachelor of Chemical Engineering Sep 2011 - May 2015

Universitat de València – Spain

Final degree project title: "Design of catalytic converters in exhaust pipes"
Advisor: Dr. Benjamín E. Solsona Espriu

SCHOLARSHIPS

FPI scholarship (PhD candidate)   Oct 2017
Research staff training program from the Ministry of Economy and Competitiveness for I+D+i
Universidad de Zaragoza – Spain
Research Project: "DPI2015-65962-R"

WORK/RESEARCH EXPERIENCE

Visit PhD Researcher   May 2021 - June 2021
Prof. Eduardo Fernández Jover
Retina model simulation through Virtual Reality
Instituto de Bioingeniería
Universidad Miguel Hernández

Visit PhD Researcher   Sep 2019 - Dec 2019
Prof. Benoit Cottereau and Christophe Jouffrais
Spiking Neural Networks
IRIT and CerCo labs
University of Toulouse

Research Engineer   May 2017 - Oct 2017
Robotics, Perception & Real Time Group
Universidad de Zaragoza – Spain
Research Project: "DPI2015-65962-R"
Research in Computer Vision and Robotics: Egocentric computer vision for the interaction with the environment of people with visual disability

Research Assistant   Sep 2016 - May 2017
Engineering Department
Universitat de València – Spain
Research in Carboquímica: Elimination of a representative VOC by total oxidation using catalysts

PUBLICATIONS

Journals, International Conferences and Workshops

[1] "Visual acuity assessment with visual prosthesis through a virtual reality system"
   Melani Sánchez García, Roberto Moreollón Ruiz, Rubén Martínez Cantín, Jose J. Guerrero and Eduardo Fernandez Jover
   This work is in preparation and will be submitted in October 2021 at Journal of Neural Engineering

[2] "Augmented reality navigation system for visual prosthesis"
   Melani Sánchez García, Alejandro Perez Yus, Rubén Martínez Cantín and Jose J. Guerrero
   Journal of Neural Engineering
   Submitted: September 14, 2021

[3] "Influence of field of view in visual prostheses design: Analysis with a VR system"
Melani Sánchez García, Rubén Martínez Cantín, Jesús Bermudez Cameo and Jose J. Guerrero
Journal of Neural Engineering
Published: October 7, 2020

[4] "Semantic and Structural Image Segmentation for Prosthetic Vision"
Melani Sánchez García, Rubén Martínez Cantín and Jose J. Guerrero
PLOS ONE Journal
Published: January 29, 2020

[5] "Indoor Scenes Understanding for Visual Prosthesis with Fully Convolutional Networks"
Melani Sánchez García, Rubén Martínez Cantín and Jose J. Guerrero
VISAPP 14th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications, 22, October 2018

[6] "Structural and object detection for phosphene images"
Melani Sánchez García, Rubén Martínez Cantín and Jose J. Guerrero
Published in Arxiv, 25, September 2018

[7] "Smart Representation of Indoor Scenes under Simulated Prosthetic Vision"
Melani Sánchez García, Rubén Martínez Cantín and Jose J. Guerrero
WiCV Women in Computer Vision Workshop, 15th European Conference on Computer Vision (ECCV), 9, September 2018

SUPERVISED BACHELOR/MASTER PRACTICUM SUPERVISOR

- Lorenzo Labadial Mur. Co-supervised with Rubén Martínez Cantín. Bs. Industrial Eng. Universidad de Zaragoza. 2020-2021

- Violeta Estepa Ramos. Co-supervised with Rubén Martínez Cantín. Bs. Industrial Eng. Universidad de Zaragoza. 2019-2020

- María Santos Villafranca: "Simulador de prótesis visual en entornos 360º con gafas de realidad virtual". Co-supervised with Jose Jesús Guerrero Campo. Bs. Industrial Eng. Universidad de Zaragoza. 2018-2019

- Pedro Luis Compais Serrano: "Sistema de asistencia a la navegación basado en la cámara de eventos". Co-supervised with Jose Jesús Guerrero Campo and Rubén Martínez Cantín. Bs. Industrial Eng. Universidad de Zaragoza. 2018-2019

PARTICIPATION IN RESEARCH REVISIONS

[1] External Reviewer in Journal of Neural Engineering, 2020

[2] External Reviewer in ICRA IEEE International Conference on Robotics and Automation - 2020, Paris, Virtual Conference, IEEE Robotics and Automation Society.

[3] External Reviewer in ACVR Sixth International Workshop on Assistive Computer Vision and Robotics, 9, September 2018

RESEARCH PROJECTS

- Egocentric Computer Vision for Environment Interaction of Visually Impaired People (EVEIVI), DPI2015-65962-R. Financed by MINECO and UE/FEDER. P.I.(principal investigator): Jose J. Guerrero

OTHER ACTIVITIES

- "Influence of Field of View in Visual Prostheses Design: Analysis with a VR System"
  Presented at IX Jornada de Jóvenes Investigadores del I3A, 2020

- I was featured in Ágora, which is the Aragón Radio program dedicated to popular science.

- I participated in the initiative 'Una ingeniera en cada cole' (AMIT)

- "Semantic and Structural Image Segmentation for Prosthetic Vision"
  Presented at VIII Jornada de Jóvenes Investigadores del I3A, 2019

PROGRAMMING LANGUAGES

Python
Tensorflow and Keras
C/C++
Matlab
OpenCV
R
ROS

LANGUAGES

English — Fluent (C1)
German — Beginner
Spanish — Native

REFERENCE LIST

- **Josechu Guerrero** (jguerrer@unizar.es)
  Universidad de Zaragoza
  Robotics, Perception and Real-Time Group, I3A
  Zaragoza, Spain

- **Rubén Martínez Cantín** (rmcantin@unizar.es)
  Universidad de Zaragoza
  Robotics, Perception and Real-Time Group, I3A
  Zaragoza, Spain

- **Benoit Cottereau** (benoit.cottereau@cnrs.fr)
  CNRS
  Centre de Recherche Cerveau & Cognition
  Toulouse, France

- **Tushar Chauhan** (tushar.chauhan@cnrs.fr)
  CNRS
  Centre de Recherche Cerveau & Cognition
  Toulouse, France

- **Eduardo Fernández Jover** (e.fernandez@umh.es)
  Instituto de Bioingeniería
  Universidad Miguel Hernández
  Elche, Spain