



### CURRICULUM VITAE (CVA)

**IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.**

#### Part A. PERSONAL INFORMATION

|                |            |
|----------------|------------|
| <b>CV date</b> | 11/11/2022 |
|----------------|------------|

|  |                     |                            |   |
|--|---------------------|----------------------------|---|
| First name                                 | Carlos Javier       |                            |   |
| Family name                                | Pérez Sánchez       |                            |   |
| Gender                                     | Male                | Birth date<br>(dd/mm/yyyy) | 09/09/1971  |
| Social Security,<br>Passport, ID number    | 25.587.648X         |                            |   |
| e-mail                                     | carper@unex.es      | URL Web                    | <a href="http://bayes.unex.es">http://bayes.unex.es</a> |
| Open Researcher and Contributor ID (ORCID) | 0000-0001-6385-9080 |                            |   |

#### A.1. Current position

|                   |  |                         |               |
|-------------------|--|-------------------------|---------------|
| Position          | Full Professor/Catedrático de Universidad                  |                         |               |
| Initial date      | 26/10/2020   |                         |               |
| Institution       | Universidad de Extremadura                                 |                         |               |
| Department/Center | Departamento de Matemáticas                                | Facultad de Veterinaria |               |
| Country           | Spain  | Teleph.<br>number       | +34 927257146 |
| Key words         | Bayesian methods; Decision analysis; Stochastic simulation |                         |               |

#### A.2. Previous positions (research activity interruptions, art. 14.2.b)

| Period                  | Position/Institution/Country/Interruption cause                                      |
|-------------------------|--|
| 04/11/2009 - 25/10/2020 | Associate Professor (Profesor Titular de Universidad).<br>Universidad de Extremadura |
| 01/08/2006 - 03/11/2009 | Associate Professor (Profesor Contratado Doctor).<br>Universidad de Extremadura      |
| 18/10/1999 - 31/07/2006 | Non-permanent Assistant Profesor (Profesor Asociado).<br>Universidad de Extremadura  |
| 02/03/1999 - 17/10/1999 | Predoctoral grant (Becario). Universidad de Málaga                                   |

#### A.3. Education

| PhD, Licensed, Graduate   | University/Country    | Year |
|---------------------------|-----------------------|------|
| Mathematics degree        | Universidad de Málaga | 1994 |
| Mathematics master thesis | Universidad de Málaga | 1996 |
| PhD in Mathematics        | Universidad de Málaga | 2003 |

#### Part B. CV SUMMARY

The applicant is a Full Professor in the Area of Statistics and Operations Research at the University of Extremadura (UEX). He got his PhD in Mathematical Sciences at the University of Málaga (Stochastic Simulation in Bayesian Inference and Decision Theory). He has developed an intense research activity in Bayesian decision and inference. He has solved decision problems by developing innovative approaches in many multidisciplinary contexts. In recent years, he has focused on risk analysis and decision-making tools for integration in artificial intelligence systems. The development of new methods for computer-aided diagnosis system is the main current interest, having provided several approaches to automatically detect and follow progression of voice-detectable diseases such as Parkinson, Reinke's edema, nodules, polyps... He is also involved in text mining for automatic summarization and sentiment analysis.



He has obtained relevant results that have led to a significant number of scientific papers (more than 80), book chapters (9), communications to conferences (more than 110) and a third national award for operations research. According to Web of Science (Clarivate analytics), he has published 71 papers in JCR journals and 7 papers as book chapters in proceedings with peer review from prestigious publishers such as Springer or Taylor and Francis. He has 4 six-year terms (3 for research and one for transfer) evaluated by the CNEAI, supervised 6 PhD, and participated as a researcher in 14 competitive research projects, of which 6 have been multidisciplinary. As a main researcher, he has led 6 competitive projects and 9 research contracts with different companies.

He is the coordinator of the research group "Decision and Bayesian Inference", to which he has belonged since its origins, and has contributed decisively to its consolidation. He has contacts with internationally renowned scientists, such as Prof. Girón from the Royal Academy of Exact, Physical and Natural Sciences (Málaga, Spain) or Prof. Müller from the University of Austin Texas (Austin, USA). He has made research stays in prestigious centers such as the MD Anderson Cancer Center (Houston, USA) or the Center for Environmental Systems Research (Kassel, Germany). In addition, he has been a reviewer of multiple scientific journals in the areas of Probability and Statistics and Operations Research and Management Sciences.

The applicant has paid special attention to linking research and teaching by training students (bachelor's and master's degrees) in the research lines in which he has participated. Since 2012, he has supervised 28 bachelor's or master's thesis, and 5 PhDs. He is currently supervisor of two PhDs that are scheduled to be defended in early 2023. He is involved in raising funds for competitive pre-doctoral scholarships, having obtained two of them (regional and FPU). The PhD students and other graduate's jobs prospects are part of his concerns. In addition, he has kept contact with them to continue a research collaboration. In fact, two of them (university tenants) belong to the research or work team of this project. In the last 10 years, he has trained 12 graduates that have been contracted by projects for which the applicant has been the main researcher, having spent the entire budget of the projects in hiring. At the same time that they work for the corresponding project, they have been trained in research methodologies and statistical techniques for a better integration into the labor market. All of them are currently hired at universities, research centers or technology-based companies. He has sufficient training capacity, maintains external research contacts for collaboration and has the physical space and equipment (in addition to what may eventually be obtained with this project) to incorporate more pre-doctoral students so that they can carry out their research work under optimal conditions. In addition, he participates in the Doctoral Program in Modeling and Experimentation in Science and Technology at the University of Extremadura and in the Doctoral Program of Public Health.

The applicant keeps in touch with companies in the field of technology and with institutions of social interest for transferring the research results. Specifically, with the Spanish Parkinson's Disease Federation, the Regional Parkinson's Association of Extremadura, the Otolaryngology Service of the Cáceres Hospital and the Occupational Risk Prevention Service of the UEx, FREMAP, and Preving to help diagnose and follow up on voice-detectable diseases and with Metadatol for text mining. He has also transferred results to other companies such as NotAnts (precision agriculture system) or ASPgems (learning analytics). He currently has contracts via article 83 with Metadatol, NotAnts, and Preving. Collaborating companies constantly request him human resources to incorporate them into their staffs.

## **Part C. RELEVANT MERITS**

### **C.1. Relevant publications in JCR (last 5 years)**

- L. Naranjo, C. J. Pérez, Y. Campos-Roca, M. Madruga (2021). Replication-based regularization approaches to diagnose Reinke's edema by using voice recordings. *Artificial Intelligence in Medicine*, 10.1016/J.ARTMED.2021.102162, IF=5.326 (Q1).
- L. Naranjo, C. J. Pérez, Y. Campos-Roca (2021). Monitoring Parkinson's disease progression based on recorded speech with missing ordinal responses and replicated covariates. *Computers in Biology and Medicine*, 10.1016/j.compbiomed.2021.104503, IF=4.589 (Q1).



- J. M. Sanchez-Gomez, M.A. Vega-Rodriguez, C. J. Pérez (2021). The impact of term-weighting schemes and similarity measures on extractive multi-document text summarization. *Expert Systems with Applications*, 10.1016/J.ESWA.2020.114510, IF=6.954 (Q1).
- M. Madruga, Y. Campos-Roca, C. J. Pérez (2021). Multicondition Training for Noise-Robust Detection of Benign Vocal Fold Lesions From Recorded Speech. *IEEE Access*, 10.1109/ACCESS.2020.3046873, IF=3.367 (Q1).
- J. Carrón, Y. Campos-Roca, M. Madruga, C. J. Pérez (2021). A mobile-assisted voice condition analysis system for Parkinson's disease: assessment of usability conditions. *BioMed Engineering OnLine*, 10.1186/s12938-021-00951-y, IF=2.819 (Q3).
- L. Naranjo, C. J. Pérez, R. Fuentes-García, J. Martín (2020). A hidden Markov model addressing measurement errors in the response and replicated covariates for continuous nondecreasing processes, *Biostatistics*, 10.1093/biostatistics/kxz004, IF=3.028 (Q1).
- M. J. Rufo, J. Martín, C. J. Pérez, M. S. Paniagua (2020). A Bayesian decision analysis approach to assess voice disorder risks by using acoustic features, *Biometrical Journal*, 10.1002/bimj.201700233. IF JCR=1.146 (Q2).
- D. Montaña, Y. Campos-Roca, C. J. Pérez (2018). A Diadochokinesis-based expert system considering articulatory features of plosive consonants for early detection of Parkinson's disease. *Computer Methods and Programs in Biomedicine*, doi.org/10.1016/j.cmpb.2017.11.010. IF JCR= JCR: 3.424 (Q1).
- L. Naranjo, C. J. Pérez, J. Martín, Y. Campos-Roca (2017). A two-stage variable selection and classification approach for Parkinson's disease detection by using voice recording replications, *Computer Methods and Programs in Biomedicine*, 10.1016/j.cmpb.2017.02.019. IF=2.674 (Q1).
- L. Naranjo, C. J. Pérez, J. Martín (2017). Addressing voice recording replications for tracking Parkinson's disease progression. *Medical & Biological Engineering & Computing*, 10.1007/s11517-016-1512-y. IF=1.916 (Q2).

## C.2. Communication in conferences

Since 2012, the applicant has provided contributions to 44 international and 24 national conferences. Some relevant communications related to the topic of the project are:

- L. Naranjo, C. J. Pérez, Y. Campos-Roca (2020). A Hidden Markov model addressing ordinal response for non-decreasing processes. 13th International Conference of the ERCIM WG on Computational and Methodological Statistics. Oral communication.
- M. J. Rufo, J. Martín, C. J. Pérez (2019). Selecting an effective preventive program for university lecturers' vocal health. 30th European Conference on Operational Research. Oral communication.
- L. Naranjo, C. J. Pérez, J. Martín, F. Calle-Alonso (2018). A new asymmetric link-based binary regression model to detect Parkinson's disease by using replicated voice recordings. 26th European Signal Processing Conference. Oral communication.
- M. J. Rufo, J. Martín, C. J. Pérez (2018). A bilateral negotiation model using a Bayesian process of beliefs updating. 29th European Conference on Operational Research. Oral communication.
- C. J. Pérez, K. Reder, M. A. Vega-Rodríguez, M. Flörke, J. Alcamo (2016). An artificial bee colony-based optimization approach to design a water quality monitoring network in a river system. 9th International Conference of the ERCIM WG on Computational and Methodological Statistics. Oral communication.

### C.3. Research projects from competitive calls

- PID2021-122209OB-C32. Stochastic modeling for machine learning. Applications to computer-aided diagnosis. 01/01/2022-31/12/2024. PI: C. J. Pérez. 32,700 €.
- EQC2019-005583-P. Laboratory of prototyping and radiofrequency measurements. National project. 01/12/2019-01/12/2021. PI: Y. Campos-Roca. 221,880 €.
- MTM2017-86875-C3-2-R. Advanced stochastic modeling for risk analysis. Environmental risk management. Ministerio de Economía y Competitividad. PI: C. J. Pérez. 01/01/2018-30/09/2021. 57,959 €.
- GR18108. Competitive grants for research group catalogue. Junta de Extremadura. PI: C. J. Pérez. 01/05/2018-09/11/2020. 56,703 €.
- IB16054. Development and application of a low-cost, non-invasive technology based on acoustic biomarkers for the automatic diagnosis and monitoring of voice diseases: Junta de Extremadura. PI: C. J. Pérez. 02/06/2017-09/11/2020. 74,011 €.
- MTM2014-56949-C3-3-R. Inference for Risk Analysis. Security versus Climate Change. Ministerio de Economía y Competitividad. PI: C. J. Pérez. 01/01/2015-31/12/2017. 45,859 €.
- MTM2011-28983-C03-02. Bayesian methods for risk analysis with applications. Ministerio de Educación y Ciencia. PI: J. Martín. 01/01/2012-31/12/2014. 37,700 €.
- TIN2008-06796-C04-03/TSI. Bayesian methods in Collaborative Decision Analysis. Ministerio de Educación y Ciencia. PI: J. Martín. 01/01/2009-31/12/2011. 40,293 €.
- PDT09A009. Bayesian Methods for Image Search and Classification. Junta de Extremadura. Junta de Extremadura. PI: J. Martín. 10/10/2009-09/10/2011. 75,900 €.

### CI.4. Contracts, technological or transfer merits

- 281/21. Computer vision and artificial intelligence platform for the detection of occupational hazards in industrial plants and construction sites. Preving Investments. PI: C.J. Pérez. 22/11/2021-21/11/2022. 4,200€.
- 075/21. Development of a research line for recycling used cigarette filters as acoustic materials. Altadis. PI: V. Gómez. 01/01/2021-31/12/2022. 36,300 €.
- 252/20. Development and implementation of natural language processing techniques for the management of audiovisual content in a big data analysis context. Metadatol. PI: C.J. Pérez. 27/10/2020-26/04/2022. 43,560 €.
- TE-0020-19. Development and application of statistical techniques based on massive data analysis for beekeeping. NotAnts. PI: C. J. Pérez. 01/10/2020-31/03/2022. 40,677.
- TE-0040-18. Determination of the nutritional status of olive farms using satellite images and hyperspectral data. NotAnts. PI: C. J. Pérez. 01/08/2018-28/08/2020. 40,677 €.
- 038/17. Implementation of statistical techniques for massive data analysis for the optimization of resources in precision agriculture. Empresa NotAnts. PI: C. J. Pérez. 01/02/2017-31/01/2019. 29,282 €.
- 039/17. Development and implementation of digital learning analytics tools. ASPgems. PI: C. J. Pérez. 01/02/2017-01/08/2018. 38,720 €.
- 006/17. Research and development in engagement and evaluation metrics for integration in neurodidactics software. ASPgems. PI: C. J. Pérez. ASPgems. 01/03/2017-01/09/2018. 25,000 €.
- 213/15. Research Chair in Digital Tools and Data Analysis. ASPgems. PI: C. J. Pérez. 28/10/2015-31/12/2018. 29,680 €.
- 2014/00030/001. Development of a voice quality evaluation program by automatically classifying acoustic signals. Fundación Mapfre. PI: C. J. Pérez. 01/01/2014-31/12/2014. 8,000 €.