Date	23/06/2023

A.1. Current professional status

Organization	University Rey Juan Carlos			
Department/Center	Signal and Communications Theory and Telematic Systems and Computing			
Address	Camino del Molino s/n			
Phone	+34 658 283 283	email	ismael.gomez.talal@urjc.es	
Professional Category	Researcher		Start date	30/07/2022

A.2. Academic Background

Degree/Ph.D.	University	Year
Bachelor's Degree in Telecommunication Technologies Engineering	Rey Juan Carlos	2020
Master's Degree in Information Systems Engineering	Rey Juan Carlos	2021
Bachelor's Degree in Telematics Engineering	Rey Juan Carlos	2022
Master's Degree in Internet of Things	Carlos III de Madrid	2022

A.3. General Indicators of Scientific Production Quality

Parte B. SUMMARY OF CURRICULUM

I graduated as a Telecommunication Technologies Engineer from Rey Juan Carlos University in 2020 (my Bachelor's thesis focused on Monte Carlo evaluation in 5G networks using Massive MIMO antennas with a grade of 10). Subsequently, I earned a Master's Degree in Information Systems Engineering from the same university (my Master's thesis involved designing and implementing a Python application for detecting deepfake images using convolutional neural networks). The following year, I completed a Bachelor's Degree in Telematics Engineering (with a focus on analyzing restaurant tickets and identifying consumption patterns using the unsupervised Machine Learning model Mult Correspondence Analysis (MCA) with a grade of 10, highest honors). In the same year 2022, I obtained a Master's Degree in Internet of Things from Carlos III University (my thesis centered around forecasting restaurant ticket revenue using time series methods, including classical techniques and Long Short Term Memory (LSTM) neural networks).

My scientific trajectory stands out in Big Data analysis for domains like hospitality, audio, educational surveys, etc. Regarding restaurant analysis, I applied unsupervised ML models to Madrid restaurant tickets, examining 2019 sales data. I identified consumption trends based on different temporal cycles, visualizing them in a user-friendly format for restaurant management. I also developed an iOS-compatible app to help implement strategies that reduce food waste. Another project focused on estimating Direction of Arrival (DOA) angles, involving (1) pseudo-random generation of array antenna data, (2) unsupervised Manifold Learning model design, and (3) supervised neural network experiments for DOA angle estimation. My research goal centers on using interpretable Machine Learning (IML) models based on unsupervised Manifold Learning algorithms to uncover data patterns, followed by designing applications for easy interaction with data insights.

Parte C. MOST RELEVANT ACHIEVEMENTS

C.1. Publications

C.1.1 Scientific Publications

- Title: Avoiding Food Waste from Restaurant Tickets: A Big Data Management Tool
  - Authors: Ismael Gómez-Talal, Lydia González-Serrano, José Luis Rojo-Álvarez y Pilar Talón-Ballestero.
  - Journal: Journal of Hospitality and Tourism Technology.
  - Year: 2023.
  - Status: Submitted and under review..

C.1.2 Conferences

- Conference: XXXVth URSI General Assembly and Scientific Symposium.
  - Title: Deep Learning and Latent Variables in Nonuniform Antenna Array Processing for Direction of Arrival.
  - Authors: Ismael Gómez-Talal, Luis Bote-Curiel, José Luis Rojo-Álvarez, Christos Christodoulou y Manel Martínez-Ramón.
  - Type: Oral presentation.
  - Date: August 19 - August 26, 2023.
  - Date: Sapporo (Japan).
  - Status: Accepted.
- Conference: XXXIth European Signal Processing Conference.
  - Title: Predicting Ovarian Cancer with Machine Learning: Integrating Clinical and Genetic Data.
  - Authors: Ismael Gómez-Talal, Arantzazu Barquín, Luis Bote-Curiel, Mónica Yagüe-Fernández, José Luis Rojo-Álvarez y Jesús García-Donás.
  - Type: Poster.
  - Date: September 4 - September 8, 2023.
  - Location: Helsinki, Finland.
  - Status: Accepted.
- Conference: XIV International Tourism And Information & Communication Technology.
  - Title: Unsupervised Sales Forecasting Model Using Big Data Tools on Restaurant Tickets.
  - Authors: Ismael Gómez-Talal, Lydia González-Serrano, Pilar Talón-Ballestero y José Luis Rojo-Álvarez.
  - Type: Oral presentation.
  - Date: October 19 - October 20, 2023
  - Date: Malaga (Spain).
  - Status: Submitted and under review.

C.2. Projects

- Title: Data Science Fundamentals for Applications in Health and Tourism (BigTheory)
  - Funding Agency: State Research Agency.
  - Principal Investigator: Inmaculada Mora Jiménez.
  - Participating Institution: University Rey Juan Carlos.
  - Participation Duration: November 27, 2021 – Present.
  - Contribution: Employed full-time in the project for research tasks involving novel data analysis techniques and interpretable Machine Learning. Developed a customer segmentation model based on customer value, including:
    - 1) Creating a scheme for grouping customers based on their value to the company.
    - 2) Developing a pricing scheme for individual customers versus the company, considering demand fluctuations, company value, and individual customer value. Applied these techniques to data from a major hotel chain to evaluate the proposed segmentation model.

- Title: Disruptive e-health Technology based on Machine Learning Algorithms and Technology to Generate Relevant Knowledge about Major Diseases.
    - Funding Agency: Persei Vivarium S.L.
    - Principal Investigator: José Luis Rojo Álvarez.
    - Participation Duration: November 30, 2022 – December 30, 2022.

C.3. Languages

- English: C1 (*Certificate in Advanced English – CAE*).

C.4. Professional Experience

- July 26, 2022 – Present
    - Researcher
    - University Rey Juan Carlos
    - Employed full-time in the "Data Science Fundamentals for Applications in Health and Tourism (BigTheory)" project for research tasks including:
        - Developing a theoretical framework for statistical and algorithmic analysis (using Machine Learning techniques) of heterogeneous data.
        - Creating a customer segmentation model based on customer value.

- March 9, 2022 - July 26, 2022
    - Engineer-Researcher
    - University Rey Juan Carlos
    - Internship involved:
        - Handling software-related issues and installation support in the DUPLICADOS project, part of a collaboration with NH Hotel Group.
        - Developing statistical models for restaurant data in collaboration with Dynameat.
- July 1, 2019 - September 1, 2019
    - IT Consultant
    - Everis NTT DATA
    - Internship tasks included:
        - Development, maintenance, and testing using various languages and software such as Java, HTML, SCSS, and JavaScript.
        - Functional and business knowledge in the banking sector, tasks included documentation creation, report writing, and analyzing clients' technological needs.
        - Managing software-related issues for the TAXONOMY project's catalogs.

C.5. Networks and Affiliations

- July 30, 2022 – Present
    - Member of the High-Performance Biomedical Engineering and Data Science Research Group at University Rey Juan Carlos (BigMed+).
- September 1, 2021 - September 1, 2022
    - Vice-Delegate of the Master's in Telecommunication Engineering.
    - Delegate of the Master's in Internet of Things: Applied Technologies.
- September 1, 2018 - September 1, 2020
    - Member of the RoboTech-URJC University Association.

C.6. Additional Training

- *Advanced Bayesian Statistics Course with Python, 10/2022 - via Udemy (13.5 hours).*

- *Seminar "WORKSHOP. Aims and Objectives of Research and Theoretical Framework in Tourism Research" - via University Rey Juan Carlos (5 hours).*
- *Learn Data Analysis Course, 12/2022 - via Linkedin Learning (2 hours).*
- *Introduction to Professional Skills in Data Analysis Course, 12/2022 - via Linkedin Learning (2.3 hours).*
- *Learning Data Science: Understanding the Basics Course, 12/2022 - via Linkedin Learning (1 hour).*
- *Learn Data Science: Tell a Story with Data Course, 12/2022 - via Linkedin Learning (1 hour).*
- *Fundamentals of Project Management: Stakeholders Course, 12/2022 - via Linkedin Learning (1 hour).*
- *Fundamentals of Project Management Course, 12/2022 - via Linkedin Learning (3 hours).*
- *Fundamentals of Project Management: Risks Course, 12/2022 - via Linkedin Learning (1 hour).*
- *Fundamentals of Project Management: Teams Course, 12/2022 - via Linkedin Learning (1.5 hours).*
- *Fundamentals of Project Management: Schedules Course, 12/2022 - via Linkedin Learning (2 hours).*

C.7. Computer Skills

- Programming Languages:
  - Matlab
  - Python
  - Julia
  - Java
  - Ada
  - C
  - JavaScript
  - SQL
  - R
  - Go
- Specific Machine Learning and Deep Learning Libraries:
  - Matlab: Statistics and Machine Learning Toolbox, Deep Learning Toolbox.
  - Python: Pytorch, Keras, Scikit-Learn, Matplotlib, TensorFlow.
  - Julia: Flux, MLBase, ScikitLearn, TensorFlow, Strada.
- LaTex and Office Suite (word processors, spreadsheets, presentation software).