Álvaro Pendás Recondo

github.com/alvpr Gijón, Spain alvaropr97@gmail.com

Education

University of Oviedo, Asturias, Spain September 2019 - July 2021
Master's Degree in Telecommunication Engineering (2-year degree)
Master's Thesis: Design and implementation of an adaptive digital communication system using USRP devices. Grade: 10/10. Avaliable in github.com/alvpr.
Average grade: 9.364/10.0

University of California, Berkeley, California, USA Summer 2017 and Summer 2018
Visiting Student, Summer Session 2017 and Summer Session 2018. Department of Electrical Engineering and Computer Sciences (EECS). Fully sponsored by María Cristina Masaveu Peterson Scholarship for Academic Excellence. Classes taken: CS61a and CS61bl
GPA: 3.7/4.0

University of Oviedo, Asturias, Spain September 2015 - July 2019
Bachelor's Degree in Telecommunication Technologies and Services Engineering (4-year degree)
Mention in Telecommunication Systems
Average grade: 8.618/10.0

Research Experience

PhD Student - Severo Ochoa Fellow, University of Oviedo September 2022 - Present
Advisors: Dr. Rafael Gonzaléz Ayestarán and Dr. Jesús Alberto López Fernández
Project: Enabling Antenna Technologies for Smart Connectivity in Mm-Wave 5g and Beyond (ENHANCE-5G). I am currently in the first year of my PhD at the University of Oviedo, although I have agreed with my advisors on exploring other possibilities for the upcoming year.

Vulcanus in Japan 2021/2022 September 2021 - August 2022
Rakuten Mobile Inc. Research and Innovation Department
Supervisor: Sr. Leon Wong
Vulcanus in Japan is a 1-year industrial internship programme for European engineers and science-major students, managed by the EU-Japan Centre for Industrial Cooperation. The program consist of a four-month intensive Japanese language course and and then an eight-month traineeship in a Japanese company. Only 21 participants were selected out of more than 800 applications.
I was with the Rakuten Mobile Autonomous Network Group in Tokyo, Japan. Although the Vulcanus program lasted for 12 months, the internship was shortened to 5 (March-August) due to the Covid-19.

- Developed with another Vulcanus Participant a Proof of Concept of the decentralized controller evolution architecture for Autonomous Networks (AN) using IPFS and Ethereum to build a distributed marketplace. Our contribution has won the ITU Focus Group on Autonomous Network (FGAN) Build-a-Thon 2022 and made it to the final of the ongoing ITU AI/ML in 5G Challenge. Title: *Evolution and Blockchain: An Autonomous Network Architecture PoC* (Available in `https://github.com/ITU-AI-ML-in-5G-Challenge/Digital_Twins_Repo`).
- Researched and wrote a report on the state of the art in hardware-in-the-loop testbeds and its benefits for testing novelty algorithms before deployment in a commercial mobile network.
- Research and wrote a report on the state of the art in Machine Learning techniques applied to MIMO and their applicability given the current Mobile Network architectures.

Engineer Intern, German Aerospace Center (DLR) August 2020 - September 2020
Supervisor: Dr. Ronald Raulefs
I was with the Institute of Communications and Navigation at DLR in Oberpfaffenhofen, Germany

- Worked in the development of VDES (VHF -Very High Frequency- Data Exchange System), focusing on how to make it compatible with the AIS (Automation Identification System) standard for navigation communications. Participated in several measurement campaigns.
- Researched the state of the art in Full-Duplex Wireless Communications looking for strategies, since the limitation was that VDES and AIS are very close in frecuency, being the power handled by VDES much higher.
- Designed and implemented a research benchmark prototype that included space cancellation by location of the antennas and digital interference cancellation techniques, comparing the performance of classic adaptive filtering strategies against the use of Neural Networks.

Research Assistant, University of Oviedo October 2019 - June 2020
Supervisor: Dr. Jesús Alberto López Fernández
In the framework of the Spanish Ministry of Education and Professional Training Scholarship, I was with the Department of Electrical, Electronic, Communications and Systems Engineering, in the Signal Theory and Communications Group.

- Designed and implemented from scratch a Software Defined Radio adaptive digital communication system using USRP devices and GNU Radio. (Available in github.com/alvpr).
- Adapted and extended the system for the teaching of Digital Communications.
- Wrote a paper and presented my work at the URSI National Symposium.

NASA JPL Visiting Student Research Program (JVSRP) June 2019 - August 2019
Supervisors: Dr. Sidharth Misra and Dr. Javier Bosch-Lluis
I was with the Microwave Instrument Science Group at NASA Jet Propulsion Laboratory (JPL) in Pasadena, California.

- Researched the application of Software Defined Radio (SDR) in radiometry, developing prototypes for different applications.
- Developed a program for recreating a surface with visual, thermal and position data from a batch of independent images taken by a thermal camera embarked in an aerial vehicle.

Publications

Álvaro Pendás Recondo, Jesús A. López-Fernández. *Mock-up digital communication system based on the use of USRP over Linux.* [Conference Paper]. Presented at the USRI (International Union of Radio Science) National (Spain) Simposium, Málaga 2 - 4 September 2020. Proceedings of the 35th National Simposium of URSI in Spain.

Work in progress: A paper about Beamforming for Non-Orthogonal Multiple Access (NOMA) and a conference paper based on my contribution to the 2022 ITU AI/ML in 5G Challenge developed during my stay at Rakuten Mobile Inc. I am also studying the application of Improper Signaling in Cognitive Radio. I will send the details to the Admission Committee if I submit a paper in December or January.

Teaching Experience

Bachelor's Thesis Co-Director 2021-2022 Academic Year
Bachelor's Degree in Telecommunication Technologies and Services Engineering, University of Oviedo. Title of the Thesis: FM Surround Sound System based on Software Defined Radio. Author: Alejandro del Hoyo Vijande. Director: Dr. Jesús Alberto López Fernández.

UC Berkeley EECS Academic Intern Summer 2018
Class CS61a: The Structure and Interpretation of Computer Programs. Award for Excellence in Computer Science Teaching and Support in Honor of Outstanding Performance.

Awards and Scholarships

Winner of the **ITU Focus Group on Autonomous Networks (FGAN) Build-a-Thon 2022** and **finalist** of the ongoing **ITU AI/ML in 5G Challenge**.

Severo Ochoa Fellowship for the Training in Research and Teaching, Asturias, Spain. Awarded with 4-year funding for the pursuit of a PhD in Asturias. October 2022 - Present.

Vulcanus in Japan 2021 - 2022, A Training Program for EU / SMP-COSME Students EU-Japan Centre for Industrial Cooperation. The program acceptance rate was about 2 percent.

European Commission Erasmus+ Shcolarship. August - September 2020. Received additional financial aid as a European graduate student for my internship at DLR in Germany.

Spanish Ministry of Education and Professional Training Scholarship for Collaboration in University Departments. 2019 - 2020 Academic Year.

María Cristina Masaveu Peterson Scholarship for Academic Excellence, 2018 - 2019

UC Berkeley Award for Excellence in Computer Science Teaching and Support in Honor of Outstanding Performance. Class CS61a, The Structure and Interpretation of Computer Programs, Academic Intern. Summer 2018.

María Cristina Masaveu Peterson Scholarship for Academic Excellence 2017 - 2018

María Cristina Masaveu Peterson Scholarship for Academic Excellence 2016 - 2017

Spanish Ministry of Education, Culture and Sport (MECD) Scholarship 2015 - 2016

References

Dr. Rafael González Ayestarán. Email: rayestaran@uniovi.es
Professor at the University of Oviedo, Signal Theory and Communications Group.

Dr. Xavier Bosch-Lluis. Email: javier.bosch-lluis@jpl.nasa.gov
Technologist Level 4 at Jet Propulsion Laboratory, Caltech.

Dr. Jesús Alberto López Fernández. Email: jelofer@uniovi.es
Professor at the University of Oviedo, Signal Theory and Communications Group.

Community Involvement and Voluntary Work

Quality Commission Student Representative September 2019 - July 2021
University of Oviedo Master's in Telecommunication Engineering. *Student Volunteer*

Fundación Hogar de San José Gijón (Children's Home) March 2021 - February 2022
Sports activities organizer. *Volunteer.*

ASPACE Asturias (Cerebral Palsy Center) July 2015
Assistant in everyday activities. *Volunteer.* Total of 60 hours.

Hogar Jaipur Gijón (Intellectual Disability Center) October 2013 - May 2014
Assistant in ludic activities. *Volunteer.* Total of 30 hours.

Enredando Gijón (Children at Risk of Social Exclusion) October 2013 - May 2014
Assistant in classes and ludic activities. *Volunteer.* Total of 30 hours.

Miscellaneous

Languages
English (TOEFL iBT 107), **Spanish** (Mother tongue), **Japanese** (CEFR A2) (Basic)

Sports
Karate 3rd Dan Black Belt. Member of the Asturias Karate Team. Classification and participation in several Spanish Championships, including The Spanish Senior Karate Championship Madrid 2021. 4th place in The Spanish Junior Karate Championship Ciudad Real 2014. Three times Asturias University Champion.
Judo Green Belt.