

## CV of the researcher

### 1.1 Contact information

Borja Genovés Guzmán  
Marie Curie Postdoctoral Fellow  
University of Virginia  
Electrical and Computer Engineering Dept.  
Thornton Hall, 351 McCormick Road,  
Charlottesville, VA 22904, USA

e-mail: [bgenoves@virginia.edu](mailto:bgenoves@virginia.edu)  
SCOPUS ID: 57195409413  
ORCID ID: 0000-0002-6969-793X

### 1.2 CV summary

I consider myself as a hard worker and a person passionate for research. I always devote myself to my works and whatever I am involved. Since I was young, I have stood out in my studies. During the A levels (2008), I obtained a grant to visit the Universidad Autónoma de Madrid with the aim of learning about robotics and developing my own robot. This was offered to the most outstanding students in the Region of Madrid. I got A levels with honours, and in the university entrance exam I qualified in the position number 22 among all new students at Universidad Carlos III de Madrid (UC3M).

During my university studies, I received four excellent grants given by the Government of Region of Madrid because of excellent academic progress in courses (2009/10, 2010/11, 2011/12 and 2012/13), and some other recognitions such as the Excellence Award of Social Council to the 8 best records in the Escuela Politécnica Superior of UC3M (2012), and finalist position at Repsol Inspire program (awardee of 2000€). Repsol is one of the biggest oil companies in the world, and in this competition we presented a communication-based solution to localize underground petroleum. Besides, I received one of the two competitive grants given to Spanish students for learning about business technology organized by McKinsey & Company (HORIZON 2013). During last year of the BSc degree I got a fellowship in Signal Theory and Communications Department of the UC3M, thanks to Ministry of Education, Culture and Sport (competitive tendering process), where I developed a GSM BTS with software-defined radio, which has been used for teaching in communication engineering courses. I graduated in 2013, and my performance in BSc studies were recognized with the Best Marks Degree Award by the UC3M, Best Marks Degree Award 2012/2013 by COITT/AEGITT and the First prize in Graduation National Awards by Ministry of Education, Culture and Sports of Spain in the Area of Engineering and Architecture.

In 2013 I got a grant from the Signal Theory and Communications Department of UC3M to study MSc Multimedia and Communications. I also taught some courses and had a first contact with research. I got the Best Marks Master Award by the UC3M. Then I decided to go abroad for a year and have an international experience. I received an Erasmus+ grant to study MSc Communication Networks and Services in Institut Mines-Télécom (Télécom SudParis, France), where I had the opportunity to work during 6 months in Orange Labs in Lannion (Bretagne). I graduated in 2015 with the Best Marks Award in the class.

In 2015 I obtained a very competitive Pre-doctoral fellowship (FPU) of the Spanish Government to carry out the PhD studies. Then I joined GCOM group at UC3M, led by Prof. Ana García Armada, and under the supervision of Dr. Victor P. Gil Jimenez I obtained PhD in 2019 with the maximum grade and the *cum laude* recognition. During the PhD studies I obtained two FPU mobility grants to visit Southampton University and The University of Edinburgh (each for 3 months), under the supervision of Prof. Lajos Hanzo and Prof. Harald Haas, respectively.

After my PhD studies, I joined in 2019 IMDEA Networks Institute as a postdoctoral researcher, in Dr. Domenico Giustiniano's group, to work in VLC for low-power Internet of Things and battery-free scenarios, while co-supervising PhD and MSc students. I also performed as project manager for ENLIGHT\*EM H2020-MSCA-ITN-2018 n° 814215. In 2020 I was awarded by Ministry of Science, Innovation and Universities (Spain) with a competitive grant whose aim is to support early-stage researchers until mid-2022 (Juan de la Cierva – Formación grant). From January 2023, I am a Marie Curie postdoctoral fellow. During the outgoing phase of the fellowship (Jan 23 – Dec 24) I will be working at the University of Virginia (USA), and the return phase (Jan 25 - Dec 25) of the MSCA fellowship will be at the UC3M (Spain).

I authored publications in the most prominent conference venues and journals, including IEEE Communications Magazine, IEEE Vehicular Technology Magazine, IEEE Transactions on Communications, IEEE Transactions on Vehicular Technology, IEEE/OSA Journal of Lightwave Technology, IEEE Access, MDPI Sensors, IEEE Photonics Technology Letters and IEEE Transactions on Consumer Electronics. Besides, I published a book chapter in "Wiley 5G Ref" from the publisher John Wiley & Sons, Ltd. Additionally, I have actively contributed to the development of national and European projects. Finally, I have one patent published and I am co-founder of Sensory-Fi Ltd (LiFi4Food product), a startup providing IoT solutions for precision agriculture (<https://www.lifi4food.com/>).

### 1.3 Professional experience

**University of Virginia**, Charlottesville, VA, USA

*Visiting Postdoctoral researcher (MSCA fellow)*

**01/01/2023 - present**

- Supervisor: Maïté Brandt-Pearce and Ana Garcia Armada
- I am a Marie Curie postdoctoral fellow for the project Reconfigurable Intelligent Surface-Assisted VLC for battery-free IoT devices (RISA-VLC). The objective of the project is to design RIS-based LiFi for enabling autonomous IoT devices, studying the boundaries on communication and energy harvesting.

**IMDEA Networks Institute**, Madrid, Spain

*Postdoctoral researcher*

**01/09/2019 - 31/12/2022**

- Supervisor: Domenico Giustiniano
- My tasks as postdoctoral researcher is to manage the H2020 ITN ENLIGHT'EM project, co-supervise PhD and MSc students and contribute to the H2020 SOMIRO project. The research line is the study, design and prototyping of energy-efficient VLC devices, both at the end user (IoT devices) and at the backhauling.
- Juan de la Cierva – Formación grant (01/12/2020-30/11/2022): Main funding during postdoctoral position.

**The University of Edinburgh**, Edinburgh, United Kingdom

*FPU mobility grant by Ministerio de Educación, Cultura y Deporte*

**03/09/2018 – 30/11/2018**

- Supervisor: Prof. Harald Haas
- The aim of this grant is to support PhD students that were granted with a FPU scholarship, and allow them to do research stays with prestigious international research groups. During this research stay I study the feasibility of reflection-based relaying VLC systems, which led to publication [J3].

**University of Southampton**, Southampton, United Kingdom

*FPU mobility grant by Ministerio de Educación, Cultura y Deporte*

**15/05/2017 – 14/08/2017**

- Supervisor: Prof. Lajos Hanzo
- Same call as previous one, but different year. During this research stay I researched the effect of sunlight at outdoor O-OFDM systems and provided a scheme based on bandwidth adaptation to mitigate shot noise effect. This study was published at [J5].

**Universidad Carlos III de Madrid**, Leganés, Madrid, Spain

*PhD studies at UC3M*

**09/07/2015 – 31/08/2019**

- 22/07/2019–31/08/2019: Researcher in the project: MADRID FLIGHT-ON-CHIP in UC3M.
- 09/10/2015–19/07/2019: FPU grant for PhD. Researcher at Communications Research Group of UC3M.
- 09/07/2015–08/10/2015: Collaboration in the strategic action “bandwidth communications” in UC3M.

**Orange Labs**, Lannion, France

*Scholarship*

**02/01/2015–30/06/2015**

- Orange Labs. Internship in Lannion (Bretagne, France). Research, Anticipation and Delivery projects about Home and Family Communication, in Consumer Communication Services department.

**Institut Mines-Télécom - Télécom SudParis**, Evry, France

*Development and Researcher Engineer*

**22/09/2014 – 31/12/2014**

- Part-time job: I gave support to several research projects in the group of Prof. Noël Crespi.

**FRANCE TELECOM ESPAÑA, S.A.U**, Madrid, Spain

*Scholarship*

**29/04/2013 – 29/07/2013**

- I was involved in the Build Department. My task was to optimize the mobile network of Orange in Madrid region (radio functionalities and parameters, settings of radio configurations, management of statistic indicators of the network).

**EVERIS SPAIN, S.L.**, Madrid, Spain

*Scholarship*

**19/03/2013 – 23/04/2013**

- I was involved in the Business Intelligence Department. Project for AVIVA to monitor its workflow and sessions by using the tools PowerCenter and SQL Developer.

#### 1.4 Education

**Universidad Carlos III de Madrid**, Leganés, Madrid, Spain

PhD in Multimedia and Communications

09/07/2015 – 19/07/2019

- Supervisor: Prof. Víctor P. Gil Jiménez
- Thesis title: *Performance Enhancement Techniques for Visible Light Communication Systems*
- PhD with distinction (Extraordinary PhD award by the UC3M 2018-2019), and International Distinction.

**Institut Mines-Télécom. Télécom SudParis (France)**

MSc Communication Networks and Services

09/2014 – 06/2015

- First in his class. Academic Program Average Mark: 17.06 / 20

**Universidad Carlos III de Madrid**, Leganés, Madrid, Spain

Research Master's Degree in Multimedia and Communications

09/2013 – 06/2014

- MSc thesis advisor: Prof. Víctor P. Gil Jiménez
- MSc thesis title: *Efficient DCO-OFDM signals for Visible Light Communications by using Adaptive Neural Fuzzy Inference Systems (ANFIS)*
- First in his class. Academic Program Average Mark: 9.59 / 10.

BSc Communication Systems Engineering

09/2009 – 06/2013

- BSc thesis advisor: Prof. Víctor P. Gil Jiménez
- BSc thesis title: *Implementation of Base Transceiver Station GSM's Control Signals.*
- First in his class. Graduated Summa Cum Laude. Academic Program Average Mark: 9.1 / 10.

#### 1.5 Publications

##### 4.5.1 Book chapters

- [B1] Genovés Guzmán, B., Gil Jiménez, V.P., and Pérez Pérez, "Peak-to-Average Power Ratio Reduction Techniques" in Wiley 5G Ref – The Essential 5G Reference Online in John Wiley and Sons, Ltd. 2019.

##### 4.5.2 Journal publications

- [J1] Dayrene Frometa Fonseca, Muhammad Sarmad Mir, Sergio Iglesias de Frutos, **Borja Genoves Guzman**, Domenico Giustiniano, "Modulating LiFi for dual operation in the visible and infrared spectra", in *Computer Communications*, 2024.
- [J2] M. S. Mir, **B. G. Guzman**, A. Varshney and D. Giustiniano, "LiFi for Low-Power and Long-Range RF Backscatter," in *IEEE/ACM Transactions on Networking*, 2023.
- [J3] Dayrene Frometa Fonseca, **Borja Genovés Guzmán**, Giovanni Luca Martena, Rui Bian, Harald Haas, and Domenico Giustiniano, "A prediction-model-assisted reinforcement learning algorithm for handover decision-making in hybrid LiFi and WiFi networks" in *IEEE Journal of Optical Communications and Networking*, 2023.
- [J4] **Borja Genovés Guzmán**, Javier Talavante, Dayrene Frómata Fonseca, Muhammad Sarmad Mir, Domenico Giustiniano, Katia Obraczka, Michael E Loik, Sylvie Childress, Darryl G Wong, "Towards sustainable greenhouses using battery-free LiFi-enabled Internet of Things", in *IEEE Communications Magazine*, vol. 61, no. 5, pp. 129-135, May 2023.
- [J5] **Borja Genovés Guzmán**, Muhammad Sarmad Mir, Dayrene Frómata Fonseca, Ander Galisteo, Qing Wang, Domenico Giustiniano, "Prototyping Visible Light Communication for the Internet of Things Using OpenVLC", in *IEEE Communications Magazine*, vol. 61, no. 5, pp. 122-128, May 2023.
- [J6] M. M. Céspedes, **B. G. Guzmán**, V. P. Gil Jiménez and A. G. Armada, "Aligning the Light for Vehicular Visible Light Communications: High Data Rate and Low-Latency Vehicular Visible Light Communications Implementing Blind Interference Alignment," in *IEEE Vehicular Technology Magazine*, vol. 18, no. 1, pp. 59-69, March 2023.
- [J7] A. A. Dowhuszko and **B. G. Guzmán**, "Closed Form Approximation of the Actual Spectral Power Emission of Commercial Color LEDs for VLC," in *Journal of Lightwave Technology*, vol. 40, no. 13, pp. 4311-4320, 1 July, 2022.
- [J8] M. Morales Céspedes, **B. Genovés Guzmán**, and V.P. Gil Jiménez, "Lights and Shadows: A Comprehensive Survey on Cooperative and Precoding Schemes to Overcome LOS Blockage and Interference in Indoor VLC", in *Sensors*, vol. 21, no. 3, 2021.

- [J9] **B. Genovés Guzmán**, A. A. Dowhuszko, V. P. G. Jiménez and A. I. Pérez-Neira, “Resource Allocation for Cooperative Transmission in Optical Wireless Cellular Networks With Illumination Requirements,” in *IEEE Transactions on Communications*, vol. 68, no. 10, pp. 6440-6455, Oct. 2020.
- [J10] **B. Genovés Guzmán**, C. Chen, V. P. G. Jiménez, H. Haas and L. Hanzo, “Reflection-Based Relaying Techniques in Visible Light Communications: Will it Work?,” in *IEEE Access*, vol. 8, pp. 80922-80935, 2020.
- [J11] J. C. Estrada Jimenez, **B. Genovés Guzmán**, M. J. Fernandez-Getino Garcia and V. P. Gil Jimenez, “Superimposed Training-based Channel Estimation for MISO Optical-OFDM VLC,” in *IEEE Transactions on Vehicular Technology*, vol. 68, no. 6, pp. 6161-6166, June 2019.
- [J12] **B. Genovés Guzmán**, V. P. G. Jiménez, M. C. Aguayo-Torres, H. Haas and L. Hanzo, “Downlink Performance of Optical OFDM in Outdoor Visible Light Communication,” in *IEEE Access*, vol. 6, pp. 76854-76866, 2018.
- [J13] **B. Genovés Guzmán**, A. A. Dowhuszko, V. P. Gil Jiménez and A. I. Pérez-Neira, “Robust Cooperative Multicarrier Transmission Scheme for Optical Wireless Cellular Networks,” in *IEEE Photonics Technology Letters*, vol. 30, no. 2, pp. 197-200, Jan.15, 15 2018.
- [J14] **B. Genovés Guzmán** and V. P. Gil Jiménez, “DCO-OFDM Signals With Derated Power for Visible Light Communications Using an Optimized Adaptive Network-Based Fuzzy Inference System,” in *IEEE Transactions on Communications*, vol. 65, no. 10, pp. 4371-4381, Oct. 2017.
- [J15] V. P. Gil Jiménez, A. Lancho Serrano, **B. Genovés Guzmán** and A. García Armada, “Learning Mobile Communications Standards through Flexible Software Defined Radio Base Stations,” in *IEEE Communications Magazine*, vol. 55, no. 5, pp. 116-123, May 2017.
- [J16] **B. Genovés Guzmán**, A. Lancho Serrano, V.P. Gil Jimenez, “Cooperative Optical Wireless Transmission for improving performance in indoor scenarios for Visible Light Communications”, in *IEEE Transactions on Consumer Electronics*, vol.61, no.4, pp.393-401, November 2015.

### 1.5.3 Conference publications

- [C1] B. Genoves Guzman, M. Morales Cespedes, V.P. Gil Jimenez, A. Garcia Armada, M. Brandt-Pearce, “Optimal mirror placement to minimize the outage area in Visible Light Communication”, in Proc. IEEE Globecom 2023.
- [C2] D. Frometa Fonseca, S. Mir, B. Genoves Guzman, A. Varshney, D. Giustiniano, “PassiveLiFi Demo: Rethinking LiFi for Low-Power and Long Range RF Backscatter”, in Proc. ACM Mobicom 2023.
- [C3] D. Frometa Fonseca, B. Genoves Guzman, D. Giustiniano and J. Widmer, “A System Architecture for Battery-free IoT Networks”, in Proc. IEEE ICNP, 2023.
- [C4] M. Mir, M. Cui, B. Genoves, Q. Wang, J. Xiong, D. Giustiniano, “LeakageScatter: Backscattering LiFi-leaked RF Signals.”, in Proc. ACM Mobihoc, 2023
- [C5] J. Talavante, B. G. Guzman and D. Giustiniano, “Rethinking LiFi for Carbon Neutral Sunlight-based Communication,” in Proc. 21st Mediterranean Communication and Computer Networking Conference (MedComNet), Island of Ponza, Italy, 2023, pp. 53-60.
- [C6] Giovanni Luca Martena, Janis Sperga, Dayrene Frometa Fonseca, Rui Bian, Borja Genoves Guzman, Mohamed Sufyan Islim, John Kosman and Harald Haas, “A Simulation Tool for Interference Analysis in MIMO Wavelength Division LiFi Indoor Networks”, in Proc. IEEE International Conference on Communications (ICC Workshops), 2023.
- [C7] D. F. Fonseca, M. S. Mir, B. G. Guzman and D. Giustiniano, “Visible light or infrared? Modulating LiFi for dual operation in the visible and infrared spectra,” in Proc. 18th Wireless On-Demand Network Systems and Services Conference (WONS), Madonna di Campiglio, Italy, 2023, pp. 47-50.
- [C8] M. S. Mir, B. Majlesein, B. G. Guzman, J. Rufo and D. Giustiniano, “RGB LED Bulbs for Communication, Harvesting and Sensing,” in Proc. IEEE International Conference on Pervasive Computing and Communications (PerCom), Pisa, Italy, 2022, pp. 180-186.
- [C9] M. Mir, B. Genoves Guzman, A. Varshney, D. Giustiniano, “PassiveLiFi: Rethinking LiFi for Low-Power and Long Range RF Backscatter”, ACM Mobicom 2021, New Orleans, USA, January 2022
- [C10] M. S. S. Mir, B. Genovés Guzmán, D. Giustiniano, “LED-to-LED based VLC Systems: developments and open problems,” in Proc. of the ACM Workshop on Internet of Lights, co-located with ACM MobiSys, Virtual, June 2021
- [C11] J. Talavante, B. Genovés Guzmán, D. Giustiniano, “Multi-cell Deployment for Experimental Research in Visible Light Communication-based Internet of Things,” in Proc. of the ACM Workshop on Internet of Lights 2021, co-located with MobiSys, Virtual, June 2021

- [C12] M. S. S. Mir, B. Genovés Guzmán, A. Galisteo, D. Giustiniano, “Non-linearity of LEDs for VLC IoT applications,” in Proc. of Light Up the IoT – Workshop Co-located with ACM MobiCom, Virtual, September 2020
- [C13] A. Galisteo, P. Marocci, M. Zuniga, L. Mucchi, B. Genovés Guzmán, D. Giustiniano, “Filtering Visible Light Reflections with a Single-Pixel Photodetector,” in Proc. 17th Annual IEEE International Conference on Sensing, Communication and Networking (IEEE SECON 2020), Virtual, June 2020
- [C14] M. S. S. Mir, B. Genovés Guzmán, D. Solanki, G. Marent, D. Giustiniano, “Poster: Integration between Home Automation and Visible Light Communications,” in Proc. International Conference on Embedded Wireless Systems and Networks (ACM EWSN 2020), Lyon, France. February 2020
- [C15] B. Genovés Guzmán, A. A. Dowhuszko, V. P. Gil Jiménez and A. I. Pérez-Neira, “Cooperative Transmission Scheme to Address Random Orientation and Blockage Events in VLC Systems” in Proc. 16th International Symposium on Wireless Communication Systems (IEEE ISWCS), Oulu, Finland, 2019.
- [C16] K. Chen-Hu, B. Genovés Guzmán, V. P. Gil Jiménez, A. García Armada, “Layered ACO-CP-OFDM with insufficient Cyclic Prefix for Visible Light Communications”, in Proc. XXXIII Simposium Nacional de la Unión Científica Internacional de Radio (URSI), Granada, Spain, 2018.
- [C17] J. C. Estrada-Jiménez, B. Genovés Guzmán, M. J. Fernández-Getino García, V. P. Gil Jiménez, “Comparativa de técnicas de estimación de canal para VLC en interiores”, in Proc. XXXIII Simposium Nacional de la Unión Científica Internacional de Radio (URSI), Granada, Spain, 2018.
- [C18] R. Pérez Leal, J. J. Escudero Garzás, B. Genovés Guzmán, V. P. Gil Jiménez, A. García Armada, “Tecnología de comunicaciones móviles al alcance de todos: la experiencia del MOOC”, in Proc. XXXIII Simposium Nacional de la Unión Científica Internacional de Radio (URSI), Granada, Spain, 2018.
- [C19] B. Genovés Guzmán, T. Martínez Cortés, A. Rodríguez López and A. G. Armada, “Design of a Communication, Vision and Sensory System for a Rescuer Robot in Coal Mine Areas,” in Proc. The International Conference on Wireless Networks and Mobile Communications (WINCOM'17), 1-4 November 2017, Rabat, Morocco.
- [C20] A.A. Dowhuszko, V.P. Gil Jiménez, B. Genovés Guzmán, A. Pérez-Neira, “Distance-aware Coordinated Multi-Point Transmission for Terahertz Band Communication,” in Proc. IEEE 18th International Workshop on Signal Processing Advances in Wireless Communications (IEEE SPAWC), 3-6 July 2017, Sapporo, Japan.
- [C21] J.C. Estrada-Jiménez, B. Genovés Guzmán, M.J. Fernández-Getino García, V.P. Gil Jiménez, “Superimposed Training-based Channel Estimation for Visible Light Communications,” in Proc. International Wireless Communications and Mobile Computing Conference (IWCMC), 26-30 June 2017, Valencia, Spain.
- [C22] P. Novak, J. Babjak, T. Kot, Z. Bobovský, P. Olivka, W. Moczulski, A. Timofiejczuk, M. Adamczyk, B. Genoves Guzman, A. Garcia Armada, and A. Rodriguez, “Telerescuer - reconnaissance mobile robot for underground coal mines,” in Proc. of the Coal Operators’ Conference 2017, 6-9 February, Wollongong, Australia.
- [C23] B. Genovés Guzmán, M. Adamczyk, A. Timofiejczuk and A. Garcia Armada, “Design of a Sensory and Vision System for a Rescuer Robot in Coal Mine Areas,” in Proc. of the 6th International Congress on Technical Diagnostic (ICDT’2016), 12 - 16 September 2016, Gliwice, Poland.
- [C24] B. Genovés Guzmán and V. P. Gil Jiménez, “The Near Future of Visible Light Communications (VLC),” in Proc. IEEE Communications Society Summer School, Trento, Italy, June 20-23, 2016 (received a competitive grant from The IEEE ComSoc).
- [C25] B. G. Guzmán, V. P. Gil Jiménez, “Señales DCO-OFDM eficientes para VLC utilizando Redes Neuronales adaptativas Difusas (ANFIS)”, in Proc. XXIX Simposium Nacional de la Unión Científica Internacional de Radio (URSI), 2014.

## 1.6 *Invited presentations*

- [P1] B. Genovés Guzmán, Maité Brandt-Pearce, “Visible Light Communications for the IoT” in University of Virginia for the Wireless IoT Course (CS/ECE4501) on April 17, 2023
- [P2] B. Genovés Guzmán, “LiFi for Low-Energy IoT Systems” in Computer Networking Weekly Research Seminar Series at the Department of Computer Science and Engineering, University of California, Santa Cruz (UCSC) on October 28, 2021
- [P3] B. Genovés Guzmán, “Hardware layer: Transmitters, Receivers, and Optical Materials for VLC”, talk at “A tutorial on Visible Light Communication: An Academic and Industrial Perspective” at the International Conference on Embedded Wireless Systems and Networks (EWSN 2020), Lyon, France. February 2020

### 1.7 *Organization of international events*

- Reviewer at international journals: IEEE/OSA Journal of Lightwave Technology, IEEE Communication Letters, IEEE Access, IEEE Internet of Things Journal, IEEE Sensors Journal, IET Communications, Physical Communications Journal, IEEE Transactions on Intelligent Transportation Systems, Photonics, Sensors, Computer Communications, IEEE/ACM Transactions on Networking
- Reviewer at international conferences: IEEE VTC 2017, IEEE IWCMC 2017, IEEE Globecom 2019, IEEE ISWCS 2019, ‘Light up the IoT’ workshop (ACM Mobicom 2020), ‘Internet of Lights’ workshop (ACM MobiSys 2021), IEEE INFOCOM 2023, IEEE INFOCOM 2024
- Co-chair of “Tutorial on Fundamentals of LiFi Design and Applications” at EWSN 2022.
- Publicity chair of ‘Internet of Lights’ workshop (ACM MobiSys 2021).
- Volunteer student at the 18th IEEE International Conference on Intelligence in Next Generation Networks (ICIN 2015), Paris, France, February 2015.
- Organization of IEEE Student Paper Contest (local – UC3M) at years 2016, 2017, 2018 and 2019

### 1.8 *Prizes, Awards and Honours*

- Excellence and Entrepreneurship Awards 2021 by UC3M Social Council – category: former students (June 2021)
- PhD with distinction (Extraordinary PhD award by the UC3M 2018-2019).
- Honorary Certificate of Appreciation by IEEE Communications Society in 2018 Student Competition “Communications Technology Changing the World” for the project “Communication and Vision System for Rescue Tasks in Coal Mine Areas”.
- Best Marks Master at Télécom SudParis - Academic Program Average Mark: 17.06/20 (2015)
- Best Marks Master Award by the UC3M - Academic Program Average Mark: 9.59/10 (2014)
- First prize in Graduation National Awards by Ministry of Education, Culture and Sports of Spain in Area Engineering and Architecture (2013)
- Best Marks Degree Award 2012/2013 by Asociación Española y el Colegio Oficial de Ingenieros Técnicos de Telecomunicación (COITT/AEGITT).
- Best Marks Degree Award by the UC3M. Academic Program Average Mark: 9.1/10. Average of graduated students: 6.71/10
- Excellence Award of Social Council to the 8 best records in the Escuela Politécnica Superior of UC3M. (2012).
- Finalist at Repsol Inspire program (awardee of 2000€) – 10 selected proposals of UC3M went to the final

### 1.9 *Grants and fellowships received*

*Postdoctoral fellowship (Marie Skłodowska-Curie Actions)*

**01/01/2023 – 31/12/2025**

- Competitive European grant by European Commission to fund postdoctoral projects. Details of the project can be found at <https://cordis.europa.eu/project/id/101061853>

*Postdoctoral fellowship (Juan de la Cierva – Formación)*

**01/12/2020 – 30/11/2022**

- Competitive grant by Ministry of Science, Innovation and Universities (Spain) to fund early stage researchers with PhD

*Research visit grant*

**03/09/2018 – 30/11/2018**

- Competitive grant by Ministry of Education, Culture and Sport (Spain) to fund short research stays at top research groups

*Research visit grant*

**15/05/2017 – 14/08/2017**

- Competitive grant by Ministry of Education, Culture and Sport (Spain) to fund short research stays at top research groups

*Summer School grant*

**19/06/2016 – 23/06/2016**

- Competitive grant for IEEE student members of IEEE Communications Society to attend the 2<sup>nd</sup> IEEE Communications Society Summer School by IEEE ComSoc

- Pre-doctoral fellowship (FPU)* **09/10/2015–19/07/2019**
- Competitive grant by Ministry of Science, Innovation and Universities (Spain) to fund PhD projects and pursue a PhD degree
  - It is the most prestigious national fellowship for pre-doctoral students

- Internship Grant at enterprise* **02/01/2015–30/06/2015**
- Orange Labs. Internship in Lannion (Bretagne, France)
  - Research, Anticipation and Delivery projects about Home and Family Communication, in Consumer Communication Services department

- MSc grant (Erasmus+)* **09/2014 – 06/2015**
- Competitive grant to study a MSc (MSc Communication Networks and Services in France)

- Event Grant* **15/06/2014–28/06/2014**
- Grant XII Edition of Latin American Leaders Young People Program: an immersion to the politics, social and economic reality of Spain and the European Union. Madrid – Brussels – Santiago de Compostela. Granted by Fundación Carolina, Banco Santander and Fundación Rafael del Pino. (June 2014).

- MSc grant* **09/09/2013 – 08/09/2014**
- Competitive grant by Signal Theory and Communications Department (UC3M) to study MSc Multimedia and Communications.
  - Teaching and research were carried out

- Event Grant* **16/05/2013–19/05/2013**
- Competitive grant to learn about business technology organized by McKinsey & Company (HORIZON 2013)
  - Only 2 Spanish students were recipient of the grant.

- BSc student collaboration grant* **09/2012 – 09/2013**
- Fellowship in Signal Theory and Communications Department of the UC3M, thanks to Ministry Education, Culture and Sport (competitive tendering process)
  - Project title: Implementing functionalities of a transmitter-receiver GSM system

- Excellence Grants* **2010, 2011, 2012, 2013**
- Excellence Grants given by Government of Region of Madrid because of excellent academic progress in courses: 2009/10, 2010/11, 2011/12 and 2012/13.

### **1.10 Research projects**

- Reconfigurable Intelligent Surface-Assisted VLC for battery-free IoT devices – RISA-VLC (101061853)**  
*HORIZON-MSCA-2021-PF-01 – European Commission* **01/01/2023 - 31/12/2025**
- Type of participation: Co-Principal Investigator. This project aims to design RIS-based LiFi for enabling autonomous IoT devices, studying the boundaries on communication and energy harvesting.
  - Principal Investigator: Borja Genoves Guzman and Ana Garcia Armada. Total amount: 261.380,64 €

### **Soft Milli-robots - SOMIRO (101016411)**

- Research and Innovation action (RIA) – European Commission* **01/01/2021 - 31/12/2023**
- Type of participation: Researcher and contributor to the proposal writing. This project aims to develop the first battery-free swimming millirobot for monitoring the environmental conditions at farming. I contribute to the VLC-based communication and processing systems.
  - Principal Investigator: Domenico Giustiniano. Total amount: 2.992.200,00 €

### **European Training Network in Low-Energy Visible Light IoT Systems - ENLIGHT'EM (814215)**

- MSCA-ITN-ETN - European Training Networks* **01/06/2019 - 31/05/2023**
- Type of participation: Project manager. This project aims to train a new generation of innovators and provide them with the know-how to contribute to the development of the VLC-based IoT in the world of 5G and beyond.

- Principal Investigator: Domenico Giustiniano. Total amount: 4.147.000,00 €

### **Madrid Flight on Chip – MFOC (Exp. 49.520608.9.18 / Op. code DGII/01/21/003-18)**

*Cooperative project co-funded by Dirección General de Universidades de la Comunidad de Madrid and European Union*

**01/01/2019 - 31/12/2021**

- Type of participation: Researcher (from 22/07/2019 to 31/08/2019). I contributed with the state-of-the-art study of beamforming techniques applied to satellite communications.
- Principal Investigator: Juan Llorens. Total amount: 332.400,00 €

### **MIMO Masivo y Técnicas de Comunicaciones por Luz Visible para Mejorar la Tasas de Datos y la Cobertura en Áreas de Díficil Acceso – TERESA/ADA (TEC2017-90093-C3-2-R)**

*Programa Estatal de Investigación, Desarrollo e Innovación Orientada a los Retos de la Sociedad del Gobierno de España – MINECO/AEI/FEDER*

**01/01/2018 – 31/12/2020**

- Type of participation: Researcher. I contributed with papers [J4] and [J5].
- Principal Investigator: María Julia Fernández-Getino García. Total amount: 158.510,00 €

### **Tecnologías Habilitadoras para Comunicaciones de Acceso Compartido Licenciado y no Licenciado – ELISA (TEC2014-59255-C3-3-R)**

*Programa Estatal de Investigación, Desarrollo e Innovación Orientada a los Retos de la Sociedad del Gobierno de España – MINECO/AEI/FEDER*

**01/01/2015 – 31/12/2017**

- Type of participation: Researcher. I contributed with the study of cooperative schemes for reducing shadowing while reducing inter-cell interference in VLC scenarios, which results in publications [J6] and [J9].
- Principal Investigator: Ana García Armada. Total amount: 176.176,00 €

### **TeleRescuer: System for virtual TELEportation of RESCUER for inspecting coal mine areas affected by catastrophic events – TELERESCUER (RFCR-CT-2014-0002)**

*Research Fund for Coal and Steel of the European Commission*

**01/04/2015 - 31/12/2017**

- Type of participation: Researcher. I was in charge of communication, sensory and vision systems of the robot with the aim of performing rescuing tasks in coal mines.
- Principal Investigator: Ana García Armada. Total amount: 220.984,00 €

### **General Radio concepts for ENergy cogNizant mobile communicatioNs: SYSTem level aspects - GRE3N/SYST (TEC2011-29006-C03-03)**

*National project funded by Spanish Government*

**01/01/2012 - 30/09/2015**

- Type of participation: Researcher. I contributed to this project with publication [J7] and [J8].
- Principal Investigator: Víctor P. Gil Jiménez. Total amount: 100.430,00 €

#### **1.11 Technology transfer**

- Published Patent WO2023057618: Domenico Giustiniano, Borja Genoves Guzman, Sarmad Mir, “RF Backscatter System based on Light Fidelity”. Filing date: October 7, 2022. Countries of priority: Europe (EP4164143), United States (US18261271), Canada (CA3204806), Singapore (SG11202306367X).
- 80.000€ from the Madrid regional call Ayudas para el desarrollo de nuevas empresas innovadoras de base tecnológica (start-up) for the project titled “Actividades para el incremento del TRL en el producto LiFi4Food de la empresa SENSORY-FI” (23/01/2024 - 22/01/2025).
- Co-founder of Sensory-Fi Ltd., with commercial brand name LiFi4Food: <https://www.lifi4food.com/>
  - Winners of EIT Jumpstarter 2022 (Food category) with the project LiFi4Food. Award: 10.000€
  - EIT Seedbed Incubator 2023 participation.

#### **1.12 Supervising and mentoring activities**

PhD theses:

- Dayrene Frometa (2020 – to date)

MSc theses:

- Javier Talavante (2021)
- José Salvador Ortega Cayuela (2016)

BSc theses:

- Rocío Bartolomé Fernández (2022)
- Rubén Moreno Carrillo (2018)
- Gabriel García Sánchez (2018)
- Isaac Morcillo Gutierro (2014)

### 1.13 Teaching experience

**Universidad Carlos III de Madrid**, Leganés, Madrid

Teacher in Signal Theory and Communications Department of the UC3M in BSc degrees of the field Telecommunication Engineering. Around 40 students per course. Excellent results in student surveys. Subjects:

- Laboratory of Mobile Communications (15 hours) **2013/14**
- Mobile Communications (111.59 hours) **2014/15, 2016-2019**
- Communication Theory (30 hours) **2013/14-2018/19**
- Systems and Circuits (20 hours) **2016/17, 2017/18**
- Teacher in the Summer School Science and Technology (TECNOCAMP) at UC3M **2016, 2018, 2019**
- Teacher in course Compulsory Secondary Education + Enterprise for Young students in the Autonomous Community of Madrid. Organized by the UC3M. **2017, 2018, 2019**
- Supporting teacher in the Massive Online Open Course (MOOC): Comunicaciones móviles en la palma de tu mano (miriadaX) and Fundamentos de las comunicaciones móviles: en la palma de tu mano (edX) **2016 - 2019**

**El Corte Inglés S.A.**, Madrid

- “Digital Signal Analysis in Communications” (around 20 students, 7 hours) **04/11/2016 – 18/11/2016**

**Regional Government of Madrid**, Madrid

- “New Radio Communication Systems” to train teachers of professional training (non-university but after A levels studies) (around 30 students, 6 hours) **09/2017**

### 1.14 Other scientific activities

- Participation in the XI Forum Madrid is Science (2022) showing a demo titled ‘Battery-less wireless communication device’.
- Participation in the European Researchers' Nights 2021 with the activity ‘What are you doing to improve the planet?’
- Participation in the XX edition of the Madrid Week of Science and Innovation (2020), giving a dissemination talk, showing a demo and participating in a colloquium. Title of the activity shown: “Green light for the Earth”.
- Participation in Science is Wonderful! 2020 event within the European Research & Innovation Days.
- Participation in the European Researchers' Nights 2020 and Science and Innovation Week 2020 with the activity “Green light for the Earth”.
- Participation in the European Researchers' Nights 2018 with the activity “Wireless communications for a rescuer robot in coal mines (project TeleRescuer; RFCR-CT-2014-00002)”.
- Chair of the IEEE Students Branch Universidad Carlos III de Madrid (01/09/2019 – 06/09/2019).
- Member of IEEE (student member 2014 – 2020, member 2020 – present).
- Member of university committee in
  - 2 PhD dissertations:
    - *Blind interference alignment for visible light communication based on the network topology* by Dr. Ahmad Adnan Qidan (16<sup>th</sup> July 2020)
    - *Network planning for next generation networks (NGNS)* by Dr. Muhammad Umar Khan (4<sup>th</sup> Nov. 2022)
  - 5 master theses
  - 5 bachelor’s degree dissertations.
- Member of Red Iberoamericana de Jóvenes Líderes (2014 – present).

### 1.15 Other skills

Languages: Spanish (native), English (C1 - CEFR), French (B2 - CEFR)

Programming: MATLAB, LabVIEW, GNU Radio, Python

ANECA certifications: Prof. Ayudante Doctor, Prof. Contratado Doctor and Prof. Universidad Privada