



# MAYTEE ZAMBRANO N.

**Objective:** To contribute to scientific growth and the development of technological solutions with a social and sustainable perspective with my female leadership.

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## PERSONAL INFORMATION

- Nationality: Panamanian
- Birth date: May 1st, 1976
- Birthplace: Santiago, Veraguas, Panama

## EDUCATION

2015 University of Panama  
Panama City, Panama

*Postgraduate degree in Higher Education Teaching*

2012 Northeastern University  
Boston, Massachusetts, United States of America

*PhD in Electrical Engineering specializing in Communications and Signal Processing*

2010 Northeastern University  
Boston, Massachusetts, United States of America

*Master of Science in Electrical Engineering specializing in Communications and Signal Processing*

2006 Technological University of Panama  
Panama City, Panama

*Postgraduate studies in Telecommunications*

2003 Technological University of Panama  
Panama City, Panama

*Postgraduate degree in Digital Electronics*

1999 Technological University of Panama  
Panama City, Panama

*Bachelor of Science in Electrical and Electronics Engineering*

## PROFESSIONAL EXPERIENCE

**2019-Present:** Center of Multidisciplinary Studies in Science, Engineering and Technology,  
Public Interest Association (CEMCIT-AIP), Panama City - Panama

**Executive Director** of administrative and financial viability platform for the development of scientific research and technology transfer for the development of solutions to problems, especially for the Technological University of Panama with its academic leadership in engineering.

**2017-2018** Center of Multidisciplinary Studies in Science, Engineering and Technology, Public Interest Association (CEMCIT-AIP), Panama City - Panama

**Consultant** for the management and handling of publicly and privately financed projects of advanced scientific and engineering technology.

**2012 - Present** Technological University of Panama, Panama City - Panama

**Professor, Faculty of Electrical Engineering:** Development of scientific research and teaching in Telecommunications and Signal Processing at the undergraduate and graduate level, program development and publishing original research results, supporting accreditation initiatives, mentoring, and developing student talent. Director of the Advanced Telecommunication and Signal Processing Technologies Research Group.

**2008-2012** Department of Electrical and Computer Engineering, College of Engineering, Northeastern University in Boston, Massachusetts, United States of America

**Academic and Research Assistant:** Research Assistant adjoint to the Communication & Digital Signal Processing Center and to the Center for Subsurface Sensing and Imaging Systems, and Academic of doctoral courses of the Department of Electrical Engineering and Computer Science.

**2012- Present** International reviewer for scientific journals and funding calls for advances in science and technology.

**1998 - 1999** Panama Canal Authority, Panama City - Panama

**Engineering Assistant:** Design and maintenance of plant engineering for microwave links within the Communications Department.

## **CONTINUING EDUCATION**

- Intensive Workshop on Patent Applications by the Development Bank of Latin America CAF, 2016.
- Intellectual property, entrepreneurship, incubation and technology transfer of universities, Universidad Tecnologica de Panamá, 2016.
- Internet of things and open source. IEEE Tech Insider, 2015.
- Institute for the Formation of University Leaders. OIU-IGLU, August 04-08, 2014, Costa Rica.
- Fiber Optics Outside Plant Engineering, NTT Neomeit Kansas Area, Japan. January 24 to March 2, 2007.
- CDMA TECHNOLOGY Seoul, South Korea. November 2004
- Counterpart with JICA Japanese Expert Team from July 2005 up to this date.
- Seminar on Satellite Communications, Digital Communications, among others as part of the JICA- UTP Team.

- Seminar on Computer Repair and Maintenance, Fiber Optics, Psychology and Adult Education, Structured Cabling, etc.

## **ACADEMIC DISTINCTIONS AND HONORS RECEIVED**

- Member of the National Research System: National Researcher I, SENACYT PANAMA for the research performance period 2021-2024 and 2017-2020.
- Adjoint Professor at the University of Puerto Rico at Mayagüez from 2018 to date.
- IEEE COMSOC Best Chapter Award under my direction for IEEE Latin America for the high performance in technical and professional activities linked to the development of the field of Telecommunications in Panama compared to the performance of chapters in the Latin American Region and Caribbean countries, 2016.
- Elevation to SENIOR member of the IEEE, IEEE International for the contribution to the development of Engineering with my experience in teaching and research, 2015.
- Granted a Scholarship to achieve the University Leadership Training, Technological University of Panama, IGLU International Training at the Institute of Management and University Leadership (IGLU) of the OUI-IOHE, 08/2014-12/2015.
- IFARHU SENACYT Doctoral Studies Scholarship 2007-2012.
- Certificate of Excellence for the Best Graduate Poster Award "*Coherent Single Detector Imaging System*", Northeastern University, United States of America, CDS Recognition for the best poster at the XXII Annual Research Workshop March 2011
- Life Member of the Golden Key International Honor Society, Golden Keyboard of Directors, International Recognition of International Academic Achievement, May 2009.
- Life Member of the Eta Kappa Un Honorary Association, IEEE Eta Kappa Nu Association, International Academic Achievement Award, October 2009.
- Certificate of Excellence for the Best Graduate Poster Award: "**Compressive Sensing for Inverse Scattering Problems**".
- Other awards: Scholarship for academic excellence for Honorary position (University, Complete High School, Sigma Lambda Student during university career, Best Human Values Award, among others).

## **SOFT SKILLS**

- Work in groups and under pressure.
- Multi-physical modeling, and handling of engineering software such as: ANSYS, MATLAB, among others.
- Advanced English language
- French language in oral and written form at an upper intermediate level.
- Knowledge of financial management of research resources.
- Passionate and hard working for goals.

## **ASSOCIATIONS AND OTHERS**

- IEEE Professional Member of the Professional Branch of the Communications, Antennas and Propagation, Signal Processing and Women in Engineering Chapters.
- Member of the Panamanian Association for the Advancement of Science (APANAC).

## **RESEARCH TOPICS OF INTEREST**

- Digital signal processing for wireless communications.

- Compressive sensing applications for telecommunications.
- Detection and estimation techniques applied to radar and communications.
- Statistical signal processing for dispersive systems and imaging systems.
- Modeling and solving inverse scattering problems applied to biological materials.

## **PUBLICATIONS**

**2021:**

### **Indexed Article:**

- F. Arias, C. Medina, K. Broce, Y. Nunez, H. Pacheco, **M. Zambrano**. **Hyperspectral Signal Processing Tools for Rice Cultivation: Applications, Methods and Challenges**. AIMS Agriculture and Foods Journal.

**2019:**

### **Conference Paper:**

- Ngo, K. D., Plazaola, C., González, G., Spadafora, C., & Zambrano, M. (2019, October). **Thermo-Energetic Study in Blood Infected with Plasmodium falciparum radiated at 2.45 GHz**. In *2019 49th European Microwave Conference (EuMC)* (pp. 276-279). IEEE.

**2018:**

### **Book Chapter:**

- Edwin A. Marengo, Zambrano-Nunez Maytee, Edson S. Galagarza, **"Resolution and Multiple Scattering in Imaging"**, Editor(s): Bob D. Guenther, Duncan G. Steel, Encyclopedia of Modern Optics (Second Edition), Elsevier, 2018, pp. 136-145, ISBN 9780128149829, <https://doi.org/10.1016/B978-0-12-803581-8.09654-5>.

### **Conference Papers:**

- Arias, Fernando X., and Maytee Zambrano. **"Análisis y Estimación de Precipitación para Modelado de Caudal del Río Juan Díaz en el Distrito de Panamá Utilizando Redes Neuronales."** *KnE Engineering* 3, no. 1 (2018): 963-973.
- Moreno, Miguel, Carlos Plazaola, Guadalupe González, Mayteé Zambrano, and Carmenza Spadafora. **"Revisión de Modelos Hiperelásticos utilizados en Tejidos."** *KnE Engineering* 3, no. 1 (2018): 100-110.

### **Published International Patent Applications in WIPO:**

- Barazarte, Ronald; ZAMBRANO, MAYTEÉ; Medina, Carlos; González, Guadalupe. **Portable Device for Adaptive Noise Reduction**; WO/2018/194469; **International Application No.:** PCT/PA2018/000005; **Publication Date:** 25.10.2018; **International Filing Date:** 30.01.2018
- Medina, Carlos; ZAMBRANO, MAYTEÉ; González, Guadalupe; Barazarte, Ronald; **Rotating Damper Using a Pseudoplastic Fluid**; WO/2018/194467; **International Application No.:** PCT/PA2018/000003; **Publication Date:** 25.10.2018; **International Filing Date:** 30.01.2018
- ZAMBRANO, MAYTEÉ; Medina, Carlos; González, Guadalupe; Barazarte, Ronald; **Multi-Use Portable Exercise Machine Having Rotary Damper**; WO/2018/194468; **International Application No.:** PCT/PA2018/000004; **Publication Date:** 25.10.2018; **International Filing Date:** 30.01.2018
- ZAMBRANO, MAYTEÉ; Barazarte, Ronald; Medina, Carlos; González, Guadalupe; **Modular System for Noise Reduction**; WO/2018/194472; **International Application No.:** PCT/PA2018/000010; **Publication Date:** 25.10.2018; **International Filing Date:** 30.01.2018

- Barazarte, Ronald; González, Guadalupe; Medina, Carlos; ZAMBRANO, MAYTEÉ; ***Barbell Having a Mechanism for Controlling Rotation***; WO/2018/194473; **International Application No.:** PCT/PA2018/000011; **Publication Date:** 25.10.2018; **International Filing Date:** 30.01.2018
- González, Guadalupe; Medina, Carlos; ZAMBRANO, MAYTEÉ; Barazarte, Ronald; ***Controlled Rotary Damper Using Smart Fluids***; WO/2018/190733; **International Application No.:** PCT/PA2018/000001; **Publication Date:** 18.10.2018; **International Filing Date:** 30.01.2018
- González, Guadalupe; Medina, Carlos; ZAMBRANO, MAYTEÉ; Barazarte, Ronald; ***Linear Pump Using a Smart Fluid***; WO/2018/190734; **International Application No.:** PCT/PA2018/000002; **Publication Date:** 18.10.2018; **International Filing Date:** 30.01.2018
- Medina, Carlos; ZAMBRANO, MAYTEÉ; González, Guadalupe; Barazarte, Ronald; ***Exercise Equipment Using a Rotary Damper Based on A Smart Fluid***; WO/2018/190735; **International Application No.:** PCT/PA2018/000012; **Publication Date:** 18.10.2018; **International Filing Date:** 30.01.2018

### Other Publications

- Arias, F., Zambrano, M., Sierra, H., & Arzuaga, E. "A Comparative Study on the Parametrization of a Block-based Compressive Sensing Algorithm for Hyperspectral Imaging Applications". In *Proceedings of the 14th LACCEI International Multi-Conference for Engineering, Education, and Technology: Engineering Innovations for Global Sustainability, San Jose, Costa Rica, 2016*.
- Zambrano, M., "Comunicación Molecular: retos y Oportunidades", Revista *PRISMA Tecnológico*, ISSN 2076-8133 Vol. 6, n°1 2015, pp13-18.
- Chie, S; Medina, C.; Zambrano, M., "Estándares actuales de televisión digital: Una breve reseña y oportunidades", Revista *PRISMA Tecnológico*, ISSN 2076-8133 Vol. 6, n°1 2015, pp13-18.
- Zambrano, M.; Medina, C.; Paz Tamayo, R., "Sparse Objects Location Using Compressive Sensing," *Latin America Transactions, IEEE (Revista IEEE America Latina)*, vol.13, no.4, pp.968-974, April 2015 doi: 10.1109/TLA.2015.7106344
- Zambrano, M.; Medina, C.; Galagarza, E., "Target Localization and Reconstruction Using Compressive Sampling," *Latin America Transactions, IEEE (Revista IEEE America Latina)*, vol.13, no.2, pp.448,454, Feb. 2015 doi: 10.1109/TLA.2015.7055563.
- Cedeño, J., Zambrano, M., & Medina, C. "Redes inalámbricas de sensores eficientes para la agroindustria", Revista *PRISMA Tecnológico*, ISSN 2076-8133 Vol. 5, n°1 2014.
- Poveda, N., Medina, C., & Zambrano, M., "Tecnologías de comunicación para redes de potencia inteligentes de media y alta tensión", Revista *PRISMA Tecnológico*, ISSN 2076-8133 Vol. 5, n°1 2014.
- Velásquez, I., Zambrano, M., & Medina, C., "Redes eléctricas de interiores como canal de comunicación", Revista *PRISMA Tecnológico*, ISSN 2076-8133 Vol. 5, n°1 2014.
- Zambrano M., Medina C., and Galagarza E. "Reconstrucción de Objetos Simples Usando Muestreo Compresivo." *Proceeding of IEEE 34th edition of the Convention of Central America and Panama (CONCAPAN XXXIV 2014) Ciudad de Panamá, Panamá, Noviembre 12-14, 2014*
- Medina C., Zambrano M., and Iglesias E. "Interfaz Gráfica para Simulación y Análisis de Códigos LDPC." *Proceeding of IEEE 34th edition of the Convention of Central America*

and Panama (CONCAPAN XXXIV 2014) Ciudad de Panamá, Panamá, Noviembre 12-14, 2014.

- Medina C., and Zambrano M. "**Implementation of Encoders and Decoding Performance Analysis of Direct Product Convolutional Codes.**" *Proceeding of 2014 IEEE Latin-America Conference on Communications (LATINCOM 2014), Cartagena de Indias, Colombia, November 05-07, 2014.*
- Zambrano, M., Medina, C., & Tamayo, R. P. (2015). **Sparse object location using compressive sensing.** *IEEE Latin America Transactions, 13(4), 968-974.*
- Zambrano M., Arias F. X., & Medina C. "**Comparative Analysis of Sparse Signal Reconstruction Algorithms for Compressed Sensing**". *Twelfth LACCEI Latin American and Caribbean Conference for Engineering and Technology (LACCEI'2014), "Excellence in Engineering to Enhance a Country's Productivity" July 22 - 24, 2014 Guayaquil, Ecuador.*
- Zambrano Nuñez, M., & Montiel, J.; "**Análisis del Efecto de la Red de Distribución Eléctrica en un-Sistema de Comunicación sobre una Línea de Potencia**". Eleventh LACCEI Latin American and Caribbean Conference for Engineering and Technology (LACCEI'2013), "Innovation in Engineering, Technology and Education for Competitiveness and Prosperity" August 14 - 16, 2013 Cancun, Mexico.
- Zambrano Núñez, Maytee. "**Statistical signal processing methods in scattering.**" (2012), 141 pages; 3499820
- Marengo, E. A., Zambrano-Nuñez, M., & Berestesky, P. (2012). "**Cramér-Rao bound study of multiple scattering effects in target localization**". *International Journal of Antennas and Propagation, 2012.*
- Zambrano-Nuñez, M., Marengo, E. A., & Brady, D. (2010, November). "**Cramer-Rao study of scattering systems in one-dimensional space**". *In Proceedings of the International Conference on Antennas, Radar, and Wave Propagation (IASTED'10).*
- Zambrano-Nuñez, M., Marengo, E. A., & Fisher, J. M. (2010, October). "**Coherent single-detector imaging system**". *In Signal Processing Systems (SIPS), 2010 IEEE Workshop on (pp. 111-115). IEEE.*
- Zambrano N., Maytee, **Cramer Rao Bound Study of Scattering Systems in One-Dimensional Space**, *Northeastern University, 2010, 63 pages; 1489299.*
- Marengo, E. A., Zambrano-Nuñez, M., & Brady, D. (2009, July). "**Cramer-Rao study of one-dimensional scattering systems: Part I: Formulation**". *In Proceedings of the 6th IASTED International Conference on Antennas, Radar, and Wave Propagation (ARP'09) (pp. 1-8).*
- Marengo, E. A., Zambrano-Nunez, M., & Brady, D. (2009, July). "**Cramer-Rao study of one-dimensional scattering systems: Part II: Formulation**". *In Proceedings of the 6th IASTED International Conference on Antennas, Radar, and Wave Propagation (ARP'09) (pp. 1-8).*
- Marengo, E. A., Hernandez, R.D., Citron Y.R., Gruber, F.K, Zambrano-Nuñez, M., Lev-Ari, H. D. (2009, July). "**Compressive Sensing for Inverse Scattering**". *XXIX URSI General Assembly, Chicago Illinois, Aug. 7-16, 2008*

## SCIENTIFIC RESEARCH FUNDS

Research Project or Study	Year	Financing (Source, Amount)	Scientific Team
<u>DEVELOPMENT OF A PLATAFORM FOR RAPID INSPECTION OF MARINE VESSELS BASED ON REMOTE SENSING TECHNIQUES</u>	2021 (In Progress)	<b>Program:</b> Fomento a I+D Misión Logística. Amount: B/. 200,000.00 CODE SENACYT: P FID21-IOML-06	PIs: Dr. Fernando X. Arias, DRA. MAYTEÉ ZAMBRANO; COIPs: Dr Luis. De Gracia, Dr. Carlos Medina, MSc. Carlos Plazaola.
<u>OBSERVATION PLATFORM FOR ALGAL BLOOMS IN REGIONS COASTAL USINGHYPER SPECTRAL IMAGING AND ARTIFICIAL INTELIGENCE</u>	2021 (In Progress)	<b>Program:</b> Fomento a I+D Amount: B/. 100,000.00 CODE SENACYT: PFID21-207	PIs: Dr. Fernando X. Arias, DRA. MAYTEÉ ZAMBRANO; COIPs: Dra. Kathia Broce, Dr. Edson Galagarza
<u>GEO-REFERENCED NATIONAL REPOSITORY FOR THE COVID-19 RESPONSE SYSTEM AND MULTIVARIATE ANALYSIS OF EPIDEMIC EFFECTS REGiNa.</u>	2020 (In Progress)	<b>Program:</b> COVID19 Amount: B/. 200,000 CODE SENACYT: COVID-026	PI: DRA. MAYTEÉ ZAMBRANO; COIPs: Dr. Miguel Vargas, Dr. Fernando Arias, Dra. Nathalia Tejedor, Dr Gaspar Dacosta
<u>OPTICAL TWEEZERS TO MEASURE THE ELASTICITY OF RED BLOOD CELLS: APPLICATION TO THE STUDY OF THE RESPONSE TO ANTI-MALARIAL TREATMENTS.</u>	2020 (In Progress)	<b>Program:</b> Fomento a I+D Amount: B/. 60,000 CODE SENACYT: FIED19-R1-007	PI: Dra. Lorena Coronado; COIPs: Carmenza Spadafora; Ricardo Correa, Guadalupe González, DRA. MAYTEÉ ZAMBRANO, MSc. Carlos Plazaola, Dr. Carlos Donado
<u>DEVELOPMENT OF A HYPERSPECTRAL IMAGE ACQUISITION PLATFORM ASSISTED BY ADVANCED MACHINE LEARNING TECHNIQUES FOR RICE CROP SUITABILITY IDENTIFICATION</u>	2019 (In Progress)	<b>Program:</b> Fomento a I+D Amount: B/. 99,996.85 CODE SENACYT: FID18-096	PI: DRA. MAYTEÉ ZAMBRANO; COIPs: MSc. Fernando X. Arias, Dra. Kathia Broce, Dr. Carlos Medina, Dra. Guadalupe González
<u>IMPACT OF THE MASSIVE INTEGRATION OF ELECTRIC VEHICLES INTO THE NATIONAL ELECTRICITY SYSTEM</u>	2018 (Finished)	<b>Program:</b> I+D Desarrollo Sostenible "Misión Energía" Amount: B/. 100,000 CODE SENACYT: IDDSE18-007	PI: Dra. Guadalupe González; COIPs: DRA. MAYTEÉ ZAMBRANO, Dr. Carlos Medina, Dr. Edwin Collado
<u>CREATION OF A NATIONAL CAPACITY FOR THE CHARACTERIZATION AND STUDY OF MATERIALS AT THE MICRO AND NANO SCALE</u>	2019 (Finished)	<b>Program:</b> Convocatoria Pública de Fortalecimiento a Equipamiento e Instrumentación Especializado para Actividades de I+D (EIE) 2018. Amount: B/. 416,442.61 CODE SENACYT: EIE2018-015	PI: Dra. Carmenza Spadafora; COIPs: DRA. MAYTEÉ ZAMBRANO, Dra. Guadalupe González, MSc. Carlos Plazaola, Est. Doriana Dorta, Dr. Carlos Donado, Dr. Rolando Gittens, Dr. Ricardo Leonart
<u>IMPACT OF THE MASSIVE INTEGRATION OF RENEWABLE RESOURCES INTO THE NATIONAL ELECTRICITY TRANSMISSION SYSTEM</u>	2018 (Finished)	<b>Program:</b> Convocatoria Continua de Fomento a la Inserción de Talento Especializado (FID) 2017, Ronda 1 Amount: B/. 96,734.84 CODE SENACYT: FID2017-113	PI: Dra. Guadalupe González, COIPs: DRA. MAYTEÉ ZAMBRANO, Dr. Carlos Medina, Dr. Humberto Álvarez.
<u>DETERMINATION OF OPTIMAL PARAMETERS FOR KILLING THE MALARIA PARASITE WITHOUT DRUGS</u>	2017 (Finished)	<b>Program:</b> Convocatoria Fomento a I+D 2016 Amount: B/. 100,000	PI: Dra. Carmenza Spadafora; COIPs: Dr. Rolando Gittens, Dr. Carlos Donado, DRA. MAYTEÉ ZAMBRANO; Dra. Guadalupe González, Dr. José Stoute, Dra. Lorena Coronado
<u>COMPUTATIONAL ANALYSIS OF A BIOLOGICAL SYSTEM FOR OPTIMAL DESIGN OF IN VITRO AND IN VIVO EXPERIMENTS: CASE STUDY, MALARIA PARASITE</u>	2015 (Finished)	<b>Program:</b> Convocatoria Continua de Fomento I+D (FID) 2014, FID14-174 Amount: B/. 64,736.84	PIs: DRA. MAYTEÉ ZAMBRANO, Dra. Guadalupe González; COIPs: Dra. Carmenza Spadafora, Dr. Rolando Gittens, Dr. Jose Stoute, Dr. Ronald Barazarte; Colaboradores: Carlos Plazaola

## **SUMMARY OF SIGNIFICANT PERFORMANCE**

- Since 2013      Technical Reviewer for many international conferences and journals.
- 2014-2018      Vice-president, President of the Communications Society, IEEE Panama Section.
- 2012              Evaluator for the DAAD-SENACYT Master's and Doctoral Scholarship Program.
- 2012-2014      Evaluator for Undergraduate program of private universities for the Technical Supervision Committee at Technological University of Panamá.
- Since 2012      Representative of the Academic Vice-Rector in the selection of new full-time professors for the School of Electrical Engineering of Panama.
- 2012-2013      Organizer of the Research Integration Series at the Technological University of Panama.
- Since 2001      Developed new classes for undergraduate and graduate level and some of them have been offered at Northeastern University, USA, and others at the Technological University of Panama.
- Since 2007      Published several articles in technical and scientific journals to transfer technology to society.
- 2009 – 2020      Research work has been presented at several conferences and seminars.
- Since 2014      Mentor of many students and young researchers to build a career.
- Since 2015      Active participation in Research projects in her research expertise with accumulated funds of approximately \$1,500,000.00

## **REFERENCES**

- **Ph. D. Edwin A. Marengo**, Professor, Department of Electrical and Computer Science, Northeastern University, Boston Massachusetts, USA. Tel: 1-617-373-3358. Email: [emarengo@ece.neu.edu](mailto:emarengo@ece.neu.edu)
- **Ph. D. Carlos Medina**, Regular Professor and Vice Dean of Research and Extension of the School of Electrical Engineering, Technological University of Panama, Tel: +507 560-3043. Email: [carlos.medina@utp.ac.pa](mailto:carlos.medina@utp.ac.pa)
- **Ing. Héctor Montemayor**, President of the Technological University of Panama, +507 5603179, [hector.montemayor@utp.ac.pa](mailto:hector.montemayor@utp.ac.pa)
- **Dra. Carmenza Spadafora**, Coordinator of the Center for Cellular and Molecular Biology of Diseases - CBCMe, INDICASAT-AIP, Tel: +50768245274. [cspadafora@indicasat.org.pa](mailto:cspadafora@indicasat.org.pa)