Dante Andrinolo Olivares

danteacanswers@gmail.com Los Angeles, California +1 213 791-5888

Education

University of Southern California (USC), Los Angeles, California 2025-Present
PhD in Electrical Engineering - Advisor: Prof. Justin Haldar GPA:4.0/4.0
Research topic: Signal Processing for MRI Reconstruction.

National University of La Plata (UNLP), Buenos Aires, Argentina 2019-2024
Engineering degree (5 years degree) - Telecommunications engineering GPA: 9.11/10
Thesis: Optimized transcranial electrical stimulation for glioblastoma treating fields

Publications

Dante C. Andrinolo O., M. Fernández-Corazza, and C. Muravchik. *Optimized Transcranial Brain Stimulation for Tumor Treating Fields.* Advances in Bioengineering and Clinical Engineering. SABI 2023. IFMBE Proceedings, vol 114., 2024 (SABI 2023).

M. Fernández-Corazza et al. *Phase Amplitude Coupling Workflow for Mapping EEG Signals to Standard Brain Networks.* 2023 IEEE XX Workshop on Information Processing and Control (RPIC), Oberá, Argentina, 2023: 1-6.

Dante C. Andrinolo O, Santiago Ozafrain, *Reflectometry with Galileo Signals: Ocean and Amazon Basin Events from CYGNSS*, 2024 IEEE Biennial Congress of Argentina (ARGENCON), San Nicolás de los Arroyos, Argentina, 2024, pp. 1-7

Presentations

Optimized Transcranial Brain Stimulation for Tumor Treating Fields. XXIV Congress of Bioengineering and the XIII Conference on Clinical Engineering (SABI), October 2023.

Reflectometry with Galileo Signals: Ocean and Amazon Basin Events from CYGNSS. Gulf Coast Undergraduate Research Symposium (GCURS), Electrical and Computer Engineering Division, Rice University, November 2024.

Research Experience

UNLP Optimized tES for TTFields (Undergraduate Thesis) November 2022 - February 2024
with Dr. Mariano Fernández-Corazza and Prof. Carlos Horacio Muravchik

Worked in Optimal Transcranial Electrical Stimulation (tES) for Tumoral Treating in order to complete my thesis work. I published part of the work in a Conference paper as first author.

- Learned and validated the theory of the Forward and Inverse Problems in tES (and its analogous: EEG/MEG source localization problem) using the Finite Element Method as numerical solver for the Maxwell's Equations.
- Simulated tES in realistic head models based in the ICBM-152 Atlas with tumoral addition. Developed and applied different optimization algorithms to maximize the directionality and intensity of the electric field within a synthetic tumor, to enhance the efficacy of the therapy.
- Compared the results of the different optimization algorithms with the conventional ad hoc applied protocol, achieving successful results.
- Formulated and simulated a probabilistic model of the probability of death of the cancer cells in order to quantify the enhancement of the optimal method in comparison to the conventional protocol.

UNLP Reflectometry Signal Processing for Galileo signals August 2023 - February 2024
with Dr. Santiago Ozafrain

Worked on a GNSS signal processing project as part of a university cubesat development project. The results achieved in this work were published (first author) in a conference paper. Also, this work was presented at GCURS sessions at Rice University.

- Learned and validated conventional signal processing techniques for GPS L1/C reflectometry signals using NASA CYGNSS public raw data and metadata.
- Formulated, extended and validated the signal processing to Galileo E1 Civil signal.
- Developed an algorithm to process all the CYGNSS public data related to ocean and Amazon basin reflectometry events and generated dataset that is public for science users.

UNLP tES for TTFields July 2024 - Currently
with Dr. Mariano Fernández-Corazza and Prof. Carlos Horacio Muravchik

I am currently working in an extended version of my undergraduate thesis work, using a more complex head and electrode models. This work is intended to be submitted for publishing.

Course Projects

UNLP (Graduate) Parameter and States Estimation July 2024 - Dec 2024
Partnered with other student, we theoretically proved and numerically validated the results given in several papers about signal processing methods applied to multiple static discrete object imaging. We solved the inverse scattering problem by using MLE estimators, the MUSIC algorithm and calculated the Cramer Rao Lower Bound to quantify the quality.

UNLP Telecommunications project March - July 2023
During this project I implemented and developed a quadrature hybrid coupler and power detectors for a monostatic radar system. The device is based in the paper "Low-cost High-Resolution Radar - System Using Stretch Processing"

- I applied circuit printing techniques such as ultraviolet impression in order to print the radiofrequency circuit design.
- Proved and validated the theoretical analysis made in the paper.
- Several instruments such as VNA, multimeter, hot air rework station, and others were used throughout the implementation process.

Industry Experience

INVAP Supervised Professional Practice (remote) September 2023 - March 2024
Advised by: Dr. Martín Hurtado

- I developed an algorithm to maximize the minimum blind velocity in a pulsed radar based on PRF multiple selection.
- Inspired by the paper "Medium PRF set selection using evolutionary algorithm", I formulated the problem and applied stochastic optimization algorithms such as Particle Swarm Optimization and the Genetic Algorithm.
- The algorithm was compared to other methods, achieving better results.

Relevant Graduate courses

USC: Graduate Probability; Digital Signal Processing; Computational Tools for Inverse Problems; Magnetic Resonance Imaging.
UNLP: Parameters and States Estimation; Introduction to Functional Analysis and Applications; Radar Signal Processing; Electromagnetism (course for Physicists)

Teaching Experience

E1214 Fundamentals of Communications, UNLP, *TA* August 2022 - Dec 2024
Tasks: Homework grading, report grading, exam grading, and practical classes planning and exposure (i.e. Homework and exercises explanation). Also I have written a brief introduction to stochastic processes for communications (as stochastic processes is formally introduced in posterior subjects).

E1605 Wireless and Satellite Communications, UNLP, *TA* March 2025 - Aug 2025
Tasks: Homework grading, report grading, and practical classes planning and exposure

Awards and Scholarships

2025 ' USC Annenberg Fellowship" Graduate Fellowship awarded to pursue the Electrical Engineering PhD Program at University of Southern California.

2024 'Joaquin V. González' award, given to the top 10 highest GPAs in all National University of La Plata 2024 graduated students in engineering majors.

2024 Distinguished graduate. Best Telecommunications Engineering performance award, given by the National University of La Plata

2024 Travel Award for attending to GCURS, Rice University, Houston, Texas.

2024 Best academic performance award given by the Engineering Department of the National University of La Plata

2024 'Ing. Julio A. Huergo' award given to the highests GPAs for recent graduated engineers in District V Buenos Aires Province

2024 Graduate research Scholarship awarded by UNLP.

2023 Buenos Aires Province Scientific Investigation Comission (CICPBA) Undergraduate Training Scholarship

2023 National Interuniversity Council Stimulus to Scientific Vocations (I rejected it due to incompatibility with CICPBA scholarship acceptance)

References

Prof. Carlos Muravchik
Professor Emeritus, Electrical Engineering, UNLP, **Email:** carlosm@ing.unlp.edu.ar, **Tel:** +54 9 221 5039124.

Dr. Mariano Fernández-Corazza
CONICET Associate Researcher at LEICI Institute, UNLP, **Email:** marianof.corazza@ing.unlp.edu.ar, **Tel:** +54 9 221 5489383

Dr. Santiago Ozafrain
Research Fellow in Radar Signal Processing at Birmingham University, **Email:** s.ozafrain@bham.ac.uk, **Tel:** +54 9 221 5039124.

Interests

Signal and Image Processing; Inverse Problems; Estimation Theory; Medical Imaging; Diffusion Models. Also I am very interested in Teaching.