

J. Matias Di Martino

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PROFILE

I am an Assistant Research Professor at Duke University (USA) and a Professor at UCU (Uruguay). I have extensive experience researching, educating, and providing professional consulting. My interests include image processing, machine learning (a.k.a. AI), computer vision, and applied math. I taught undergraduate and graduate courses at the university level, led large-scale research projects, and published over 50 peer-reviewed scientific papers in top journals and conferences. As key personnel and PI, I contributed to securing over \$15M in research funds and mentored several MSc. and Ph.D. students. For more information, please visit my web: matiasdimartino.com.

EXPERIENCE

2024-PRESENT **FULL PROFESSOR, UCU, UY**
2019-PRESENT **ASSISTANT RESEARCH PROFESSOR, DUKE UNIVERSITY, US**
2017-PRESENT **CONSULTANT**
2016-2022 **ASSOCIATE PROFESSOR, UDELAR, UY**
2018-2019 **POSTDOCTORAL ASSOCIATE, DUKE UNIVERSITY, US**
2015-2016 **CHERCHEUR ASSOCIE, ECOLE NORMALE SUPERIEUR, FR**
2011-2016 **TEACHING AND RESEARCH ASSISTANT, UDELAR, UY**

EDUCATION

UDELAR, UY — PHD IN ENGINEERING AND SIGNAL PROCESSING, 2011-2015
UDELAR, UY — ELECTRICAL ENGINEERING, 2005-2011 (RANK 1/164)

FELLOWSHIPS

Researcher level I SNI (2014-present), Sistema Nacional de Investigadores, Uruguay.
Researcher level 3 PEDECIBA (in Physics and Computer Science) (2015-present)
Programa de Desarrollo de las Ciencias Basicas, Uruguay. IPOL Editorial Board (2018-present).

SKILLS

I have 10+ years of experience researching, designing, and deploying machine learning solutions. I have experience working with classical pattern recognition algorithms (e.g., decision trees, SVMs) and modern deep learning solutions. I am an expert on the development and implementation of large-scale research projects to improve medical outcomes by leveraging computer vision and machine learning. In addition, I have extensive experience in developing image processing and 3D computer vision algorithms (see list of publications for details). I worked as a consultant and advisor for private and public companies (references and additional information can be provided upon request).

RESEARCH

My main research interests are Machine Learning (a.k.a. AI), Image Processing, and Computer Vision (CV). Some of the projects Recently, my focus has been on how to use computer vision for autism screening and behavioral phenotyping, how NLP can be leveraged to understand better ARFID, How CV can be exploited to improve Transcranial Magnetic Stimulation, how novel imaging paradigms can improve face recognition and prevent spoofing attacks; how time signals can be optimized to detect fraud for power companies. Check my latest publications and my recent research grants for more details.

I have 1000+ citations, an h-index 16, and published over 50 full papers in peer-reviewed international journals and venues, including health, machine learning, image processing, and optics. Please visit my [Google Scholar](https://scholar.google.com/) profile for more details.

SUMMARY OF SELECTED PUBLICATIONS (DETAILS [HERE](#))

(AI for Health) Nature Medicine: [Perochon et al. 2023], Nature npc Digital Medicine [Perochon et al. 2023], Scientific Reports [Krishnappa et al. 2023], IJCARS: [Chaudhary et al. 2022]; IEEE TAC: [Krishnappababu et al. 2021]; IJED: [Kim et al. 2021]; JAMA Pediatrics: [Chang et al. 2021]; JCPP: [Perochon et al. 2020]. **(Computer Vision and Image Processing)** IEEE TIP: [Di Martino et al. 2020]; IEEE TPAMI: [Di Martino et al. 2020]; ICIP: [Di Martino et al. 2014]; ICCP: [Di Martino et al. 2020]; IPOL: [Di Martino et al. 2018], [Di Martino et al. 2016]. **(Energy)** IEEE TPS: [Massaferro et al. 2019]; ISGT: [Pablo Massaferro et al. 2021]; PESGM: [Massaferro et al. 2018]; **(Patter Recognition)** ICASSP: [Achddou et al. 2021]; ICPR: [Rodriguez et al. 2015], [Fiori et al. 2016]; ICPRAM: [Di Martino et al. 2012]; ICCVw: [Zhuoqing Chang et al. 2019]; JPR: [Di Martino et al. 2013]; JPRL: [Di Martino et al. 2013]. **(2D and 3D Signal Processing and Optics)** AO: [Casaballe et al. 2020], [Ayubi et al. 2016], [Ayubi et al. 2014], [Flores et al. 2013], [Di Martino et al. 2012], [Ayubi et al. 2011]; OLE: [Di Martino et al. 2014], [Di Martino et al. 2015], [Di Martino et al. 2018]; OC: [Di Martino et al. 2013]; OL: [Ayubi et al. 2011], [Flores et al. 2012], [Ayubi et al. 2012], [Di Martino et al. 2013].

GRANTS AND AWARDS

Duke Institute for Brain Sciences, Research Germinator Award (2020-2021), Accurate, affordable, and easy-to-use navigation for transcranial magnetic stimulation, role: co-I (PIs: Drs. Peterchev, Sapiro, Goetz, and Turner). 1R01-MH129733-01 Accurate, low-cost, trackerless neuronavigation for transcranial magnetic stimulation, role: co-PI (2023-2027). NIH:R33-MH-121549 (2021- 2024), Feeling and Body Investigators (FBI)-ARFID Division: Sensory and Somatic Exposure for Children with Avoidant Restrictive Food Intake, role: co-I (PIs: Drs. Zucker and Sapiro). NIH:1R01-MH120093-02 (2019-2023), Scalable Computational Platform For Active Closed-Loop Behavioral Coding in Autism Spectrum Disorder, role: co-I, (PI: Drs. Dawson and Sapiro). UTE-UDELAR (2021-2023), Power disaggregation and identification via multi-scale information fusion, role: co-PI. UTE - CSIC (2018-2020), Decoupling domestic electricity consumption, role: co-PI. CSIC I+D (2017-2019), 3D Reconstruction with structured light, role: co-PI. CSIC PhD thesis award (2015), One-shot three-dimensional scene analysis. ANII PhD scholarship (2012). CSIC PhD scholarship (2012). CSIC Undergraduate Research Award (2011). FING-UDELAR Best undergraduate thesis award (2011).

CONSULTING

I offer consulting services in machine learning, computer vision, image processing and fraud detection. Details and references can be provided upon request.

TEACHING AND MENTORING

I have 15+ years of teaching experience, mentored Master's and Ph.D. students, and coordinated courses with over 1000 students. I also was responsible for undergraduate and graduate courses. I gave lectures in Physics and Electrical Engineering. I taught at Duke and UdelaR: Image Processing (ECE588) 2021/2022/2023. 3D Vision 2017. Physics 1 2011-2017. Classical Mechanics 2008-2010. Lagrangian mechanics and Oscillations 2007-2009. Waves and Oscillations 2011, 2013, and 2014. Linear circuits and systems 1 & 2 2010/2011.

LONG-TERM INTERNATIONAL VISITS AND COLLABORATIONS

DUKE UNIVERSITY, US. PROF. G. SAPIRO - AUG 2016 AND JAN-MAR 2017
ENS PARIS-SACLAY, FRANCE. PROF. J.M. MOREL - SEP-DEC 2013/2015/2016
TELECOM PARISTECH, FRANCE. PROF. A. ALMANSA - JAN-MAR 2013
UDELAR, URUGUAY. PROF. A. FERNANDEZ- 2017-2022

LANGUAGES

SPANISH: NATIVE. ENGLISH: FLUENT. FRENCH & ITALIAN: INTERMEDIATE.