

## J. Matias Di Martino

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### PROFILE

I am currently Assistant Research Professor at Duke University, Visiting Professor at Universidad de la Republic. I have researched, educated, and provided professional consulting on machine learning, computer vision, applied math, and optics. I taught undergraduate and graduate courses at the university level, led research projects, and published over 40 peer-reviewed scientific papers. I have experience co-leading large scale research projects, and I am passionate about developing and applying AI to real world problems. As key personnel and PI I contributed to secure over 10M\$ in research funds. For more information, please visit my web: [matiasdimartino.com](http://matiasdimartino.com).

### EXPERIENCE

**ASSISTANT RESEARCH PROFESSOR, DUKE UNIVERSITY, US** 2019-PRESENT  
**ASSOCIATE PROFESSOR, UDELAR, UY** 2016-PRESENT  
**CONSULTANT, RESTOR3D** 2020-PRESENT  
**POSTDOCTORAL ASSOCIATE, DUKE UNIVERSITY, US** 2018-2019  
**CHERCHEUR ASSOCIE, ECOLE NORMALE SUPERIEUR, FR** 2015-2016  
**TEACHING AND RESEARCH ASSISTANT, UDELAR, UY** 2011-2016

### EDUCATION

**UDELAR, UY** – PHD IN ENGINEERING AND SIGNAL PROCESSING, 2011-2015  
**UDELAR, UY** – ELECTRICAL ENGINEERING, 2005-2011

### 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, implementing, and testing machine learning solutions. I have mostly worked in Matlab and Python. I have experience working with classical pattern recognition algorithms (e.g., decision trees, SVMs) as well as modern deep learning solutions. I have extensive experience in developing image processing and 3d computer vision algorithms (see list of publications for details). I worked as consultant for private and public companies.

### RESEARCH

My main research interests are: Applied optics, Image processing, Computer Vision (CV), and Machine Learning, particularly, AI for health. Some of the projects I focused on lately address: How to use computer vision for autism screening and behavioral phenotyping; How NLP can be leveraged to better understand 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 700+ citations, h-index 13, and published over 40 full papers in peer-reviewed international journals including the areas of health, machine learning, image processing, and optics. Please visit my google scholar profile for more details.

### SUMMARY OF SELECTED PUBLICATIONS (DETAILS HERE)

**(AI for Health)** 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 (pending) 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 10+ years of teaching experience, mentored Master (3) and PhD. (2) students, and coordinated courses with more than a 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. 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 2010 and 2011. Linear circuits and systems 2 2010.

#### 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.