Antonio M. Lozano Ortega

Neuroengineering · Deep Learning · Cortical Visual Neuroprostheses · Translational Neuroscience
Cortical microstimulation · Electrophysiology · Psychophysics · Neural function restoration

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Higher Education

2018–2022 **Ph.D. in Information and Communication Technologies** (Cum Laude, International Doctorate) — Polytechnic University of Cartagena, Spain
Thesis: "Towards an AI endowed visual neuroprosthesis for the blind: Development and first-in-human implementation of a deep learning intracortical neural interface." Watch on Youtube here.
Advisors: Dr. José M. Ferrández Vicente, Dr. Eduardo Fernández Jover, Dr. Francisco Javier Garrigós Guerrero

2016–2017 **ERASMUS International Student** — Polytechnic University of Milan, Italy
Masters in Biomedical Engineering. Track courses: Soft Computing, Machine Learning and Deep Learning, Model Identification and Data Mining, Bioengineering of Neurosensory Systems, Neuroengineering.

2015–2017 **MEng in Industrial Engineering** — Polytechnic University of Cartagena, Spain
Thesis: "Deep Learning models for retinal neural encoding and decoding of light patterns."
Advisors: Dr. José Manuel Ferrández Vicente, Dr. Eduardo Fernández Jover, Dr. Francisco Javier Garrigós Guerrero

2011–2015 **BEng in Industrial Tech. Engineering** — Polytechnic University of Cartagena, Spain
Thesis: "Statistical Analysis And Machine Learning Modeling of Electrophysiological Recordings of Biological Retinal Ganglion Cells on Mice".
Advisors: Dr. José Manuel Ferrández Vicente, Dr. José Manuel Cano Izquierdo

Research & Industry

2025–Present **Senior Scientific Consultant: Neuroengineering & AI** — Ruten Inc.
Strategic oversight and development for Ruten's brain–computer-interface R&D.
Design of ML and computer-vision pipelines, behavioral analysis, and neural decoding.

2025-present **Postdoctoral researcher** — UMH, Biomedical Neuroengineering Research Group (NBIO)
AI-driven cortical visual prosthesis, human-in-the-loop optimization, clinical software and experiment design for the CORTIVIS human clinical trial, within the INTENSE consortium.

2022–2024 **Co-leader of Work Package I: Blindness** — INTENSE (Innovative Neurotechnology for Society)
A NWO-funded neurotechnology consortium focused on developing cutting-edge applications for neural function recovery. Integrating knowledge, technology and researchers across the neuroscience, AI, interface neurotech, neuroethics and clinical fields, towards a brain implant for the blind.
https://intenseproject.eu/about-us

2022–2024 **Postdoctoral Researcher** — Netherlands Institute for Neuroscience, Vision & Cognition (Roelfsema) group, Amsterdam, the Netherlands
Developing next-generation brain implants for the blind: functional and anatomically-aware NHP implant optimized design. High-channel count neural recordings and microstimulation. Towards biologically plausible, differentiable phosphene simulation.

2020–2022 **PhD Researcher** Netherlands Institute for Neuroscience, Vision & Cognition (Roelfsema) group, Amsterdam, the Netherlands

Developing next-generation brain implants for the blind: creation of a translational brain implant for the blind roadmap. Design of unsupervised neural dimensionality reduction based methods for high-channel count phosphene mapping. NHP training, experiment design microstimulation and neural recordings.

2020–Present **Affiliate Member** Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen, the Netherlands

AI Modeling for neural encoding and decoding. https://neuralcod.ing/.

2020–2022 **Technical Researcher/Honorific Collaborator** UMH, Biomedical Neuroengineering Research Group (NBIO)

Behavioral and neural data analysis, and scientific writing regarding visual cortical implants clinical trials. Research collaboration through the INTENSE consortium.

2019–2021 **AI/Computer Vision Engineer** Hongo Aerospace, Tokyo, Japan

Developed real-time DL computer vision algorithms for edge-computing systems in autonomous drone applications, such as navigation through the Tokyo subway and semantic segmentation for navigation through agriculture fields.

2019 **Visiting Researcher** Tokyo Institute of Technology

Data Science lab research under Daniel Berrar. Deep learning and Information Theory elements for optimization of phosphene vision encoding and decoding strategies using the pulse2percept simulator.

2017 **Researcher** Universidad Miguel Hernández, Alicante, Spain

Core-team member at the CORTIVIS first-in-human Utah array cortical visual neuroprosthesis. Experiment design, software design, computer vision, psychophysics, behavioral and neural data analysis, deep learning retina models. Developed Neurolight: a deep learning neural interface for the blind.

Publications

† indicates equal contribution.

Peer-reviewed Journals

- **Lozano, A.†**, Chen, X.†, La Grouw, M., Li, B., Wang, F., van der Grinten, M., Soto-Sánchez, C., Morales-Gregorio, A., Fernández, E., & Roelfsema, P. R. (2025). *Large-scale mapping of artificial perceptions for neuroprostheses using spontaneous neuronal activity in macaque and human visual cortex. Brain Stimulation*, 103019. https://doi.org/10.1016/j.brs.2025.103019
- Van Hoof, R.†, **Lozano, A.†**, Wang, F.†, et al. (2025). *Optimal placement of high-channel visual prostheses in human retinotopic visual cortex. Journal of Neural Engineering*, 22(2). https://doi.org/10.1088/1741-2552/adaeef
- Dado, T., Papale, P., **Lozano, A.**, Le, L., Wang, F., et al. (2024). *Brain2GAN: Feature-disentangled neural encoding and decoding of visual perception in the primate brain.* PLOS Computational Biology, 20(5), e1012058. https://doi.org/10.1371/journal.pcbi.1012058.
- Van der Grinten†, M., de Ruyter van Steveninck†, J., **Lozano, A.†**, et al. (2024). *Towards biologically plausible phosphene simulation for the differentiable optimization of visual cortical prostheses.* eLife, 13, e85812. eLife Sciences Publications Limited.
- Fernández, E., Alfaro, A., Soto-Sánchez, C., González-López, P., **Lozano, A.**, et al. (2021). *Visual percepts evoked with an Intracortical 96-channel microelectrode array inserted in human occipital cortex.* The Journal of Clinical Investigation, 54.
- **Lozano, A.**, Suarez, J.S., Soto-Sanchez, C., et al. (2020). *Neurolight: A Deep Learning Neural Interface for Cortical Visual Prostheses.* International Journal of Neural Systems, 32.

- **Lozano, A.**, Soto-Sanchez, C., Garrigos, J., et al. (2018). *A 3D convolutional neural network to model retinal ganglion cell's responses to light patterns in mice.* International Journal of Neural Systems, 28(10), 1850043.

Preprints

- Moure, P., Granley, J., Grani, F., Soo, L., **Lozano, A.**, López-Peco, R., Villamarin-Ortiz, A., Soto-Sánchez, C., Liu, S.-C., Beyeler, M., Fernández, E. (2025). *Deep Learning-Based Control of Electrically Evoked Activity in Human Visual Cortex.* bioRxiv. https://doi.org/10.1101/2025.09.24.678361

- Sanguino-Gómez, J., Güçlü, U., Krugers, H. J., **Lozano, A.** (2025). *Coping strategies dynamics and resilience profiles after early life stress revealed by behavioral sequencing.* bioRxiv. https://doi.org/10.1101/2025.09.01.673507

- Le, L., Kimman, N., Dado, T., Seeliger, K., Papale, P., **Lozano, A.**, Roelfsema, P., van Gerven, M., Güçlütürk, Y., Güçlü, U. (2025). *Neural encoding with affine feature response transforms.* arXiv. https://doi.org/10.48550/arXiv.2501.03741 (Submitted on 7 Jan 2025).

- Le, L., Dado, T., Seeliger, K., Papale, P., **Lozano, A.**, Roelfsema, P., Güçlütürk, Y., van Gerven, M., Güçlü, U. (2025). *Inverse receptive field attention for naturalistic image reconstruction from the brain.* arXiv. https://doi.org/10.48550/arXiv.2501.03051 (Submitted on 6 Jan 2025).

- **Lozano, A.†,** , Chen, X.†, , La Grouw, M., Li, B., Wang, F., van der Grinten, M., Soto-Sanchez, C., Morales-Gregorio, A., Fernández, E., Roelfsema, P. (2024). *Large-scale RF mapping without visual input for neuroprostheses in macaque & human V1.* medRxiv [under screening].

Conference Papers, Book Chapters, Posters and Presentations

- **Lozano, A.***, Granley, J.*, Soto-Sánchez, C., Grani, F., Rodil, A., Soo, L., Turkstra, L., López-Peco, R., Villamarín-Ortiz, A., Morollón Ruiz, R., Ayuso Arroyave, M., Beyeler, M., & Fernández, E. (2025). *Human-in-the-loop optimisation for efficient intracortical microstimulation temporal patterns in visual cortex.* Poster presented at the Society for Neuroscience Annual Meeting (SfN 2025), San Diego, CA, USA. *Co-first authors.

- Le, L., Kimman, N., Dado, T., Seeliger, K., Papale, P., **Lozano, A.**, Roelfsema, P. R., van Gerven, M. A. J., Güçlütürk, Y., & Güçlü, U. (2025). *Neural encoding with affine feature response transforms.* Poster presented at the Conference on Cognitive Computational Neuroscience (CCN 2025), Amsterdam, Netherlands. (Accepted; under review for contributed talk).

- Le, L., Dado, T., Seeliger, K., Papale, P., **Lozano, A.**, Roelfsema, P. R., Güçlütürk, Y., van Gerven, M. A. J., & Güçlü, U. (2025). *Inverse receptive field attention for naturalistic image reconstruction from the brain.* Poster presented at the Conference on Cognitive Computational Neuroscience (CCN 2025), Amsterdam, Netherlands. (Accepted; under review for contributed talk).

- Le, L., Papale, P., Seeliger, K., **Lozano, A.**, Dado, T., Wang, F., Roelfsema, P. R., van Gerven, M. A. J., Güçlütürk, Y., & Güçlü, U. (2024). *MonkeySee: Space-time-resolved reconstructions of natural images from macaque multi-unit activity.* In Proceedings of the 38th Conference on Neural Information Processing Systems (NeurIPS 2024). https://openreview.net/pdf?id=OWwdlxwnFN, GitHub https://github.com/neuralcodinglab/MonkeySee

- Beyeler, M., Granley, J., **Lozano, A.**, Soto, C., Grani, F., Rodil, A., & Fernández, E. (2024). *Human-in-the-loop optimization of neural encoding strategies for visual neuroprostheses.* Abstract presented at Artificial Vision 2024: The International Symposium on Visual Prosthetics, Aachen, Germany, December 5–6, 2024. Published in German Medical Science GMS Publishing House (2025). https://doi.org/10.3205/24artvis42

- Güçlütürk, Y., **Lozano, A.**, Küçükoğlu, B., Güçlü, U., & van Gerven, M. (2024). *Dynaphos: A VR demo of biologically-plausible simulated phosphene vision for visual cortical prostheses.* Demonstration presented at the European Conference on Computer Vision (ECCV), Exhibition Area, October 1, 2024. https://eccv.ecva.net/virtual/2024/demonstration/2771

- Le, L., Papale, P., **Lozano, A.**, et al. (2023). *End-to-end reconstruction of natural images from multi-unit recordings with Brain2Pix.* Conference on Cognitive Computational Neuroscience. Oxford, UK. https://2023.ccneuro.org/proceedings/0001032.pdf

- Dado, T., Papale, P., **Lozano, A.**, et al. (2023). *Feature-disentangled reconstruction of perception from multi-unit recording.* In 2023 Conference on Cognitive Computational Neuroscience (pp. 1-4). https://doi.org/10.32470/CCN.2023.1495-0

- van der Grinten, M., de Ruyter van Steveninck, J., **Lozano, A.**, et al. (2023). *Differentiable learning of image encodings for cortical visual neuroprosthetics through bio/phenomenologically-aware phosphene modeling.* In Proceedings of the 10th International Brain-Computer Interface Meeting 2023. Graz University of Technology Publishing House. DOI: 10.3217/978-3-85125-962-9-127

- **Lozano, A.**, M. La Grouw, X. Chen, B. Li, F. Wang, P. R. Roelfsema (Presenters). *Semi-automatic recovery of visual maps from neural data via high-channel cortical implants.* Poster presented at SfN 2022, San Diego, USA. Supported by: NESTOR, INTENSE.

- Papadopoulos, N., Melanitis, N., **Lozano, A.**, et al. (2021). *Machine learning method for functional assessment of retinal models.* In 2021 43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC) (pp. 4293-4296). IEEE.

- Fernández, E., Soto-Sánchez, C., Alfaro, A., González-López, P., **Lozano, A.**, et al. (2019). *Development of a cortical visual neuroprosthesis for the blind: preliminary results. Investigative Ophthalmology & Visual Science*, 60(9), 4021–4021. (ARVO Annual Meeting abstract)

- **Lozano, A.**, Suárez, J. S., et al. (2019). *Neurolight Alpha: Interfacing computational neural models for stimulus modulation in cortical visual neuroprostheses.* In Understanding the Brain Function and Emotions. Lecture Notes in Computer Science, vol. 11486. Springer.

- Calvo, M. V., Alegre-Cortés, J., **Lozano, A.**, et al. (2018). *Analysis of stable neural activity patterns generation and classification in neural cultures for real-time robotic control.* MEA Meeting 2018 | 11th International Meeting on Substrate Integrated Microelectrode Arrays. https://doi.org/10.3389/conf.fncel.2018.38.00106

- **Lozano, A.**, Calvo, M. V., et al. (2018). *Towards a deep learning model of information encoding and decoding of in vitro neuronal cultures responses to electrical stimulation.* MEA Meeting 2018 | 11th International Meeting on Substrate Integrated Microelectrode Arrays. https://doi.org/10.3389/conf.fncel.2018.38.00112

- **Lozano, A.**, Garrigós, J., et al. (2017). *Towards a deep learning model of retina: Retinal neural encoding of color flash patterns.* In Natural and Artificial Computation for Biomedicine and Neuroscience. Lecture Notes in Computer Science, vol. 10337. Springer.

Laboratory Animal Science Licenses

Article 9 of the Dutch Act on Animal Experimentation

2022 — Amsterdam University Medical Center & Vrije Universiteit

License for Design of Experiments and Training for the Use of Laboratory Animals

- Introduction to Laboratory Animal Science
- Species-specific: Mice-Rats
- Species-specific: Nonhuman Primates

Master's thesis supervision

- **2025 (currently)** – Aura Natale Angelini. *FEM/electrical modeling and optimization techniques for visual cortex microstimulation.* University Miguel Hernández / University of Pisa.
- **2025 (currently)** – Radovan Vodila. *Unraveling the Neural Code of the Ventral Stream through Large-Scale Multi-Area Recordings and Manifold Learning.* University Miguel Hernández / Donders Institute for Brain, Cognition and Behaviour.
- **2025 (currently)** - Gergana Slaveykova. *From Frames to Flow: Multi-Area Neural Encoding and Decoding of Continuous Naturalistic Videos.* University Miguel Hernández / Donders Institute for Brain, Cognition and Behaviour.
- **2025** - Marta Gea Ponce. *Biomedical Design of Microstimulation Patterns for Sensory Neuroprostheses.* Universidad Politécnica de Cartagena, Escuela Técnica Superior de Ingeniería Industrial. BSc Biomedical Engineering.
- **2024** - Jet Veltink. *Visualizing Subjective Experiences of Visual Cortical Implant Users with AtoPI: an AI-driven Audio-to-Phosphene-Image Generator.* Radboud University / Netherlands Institute for Neuroscience.
- **2024** - G. Bouwman. *The Temporal Dynamics of Phosphenes Generated by Cortical Visual Prostheses.* Eindhoven University of Technology, Eindhoven, The Netherlands.
- **2023** - Maureen van der Grinten. *A biologically plausible phosphene simulator for the optimization of visual cortical prostheses.* Donders Institute / Netherlands Institute for Neuroscience.
- **2023** - Patrick Pollak. *What Simulated Phosphenes can reveal about Delay Fields and Inhibition of Return?* Netherlands Institute for Neuroscience.
- **2023** - Kieran M. Carrigg. *Deciphering the Wild: Deep Learning-Based Analysis of Task-Free Animal Behavior from Video Data.* Donders Institute / Swammerdam Institute for Life Sciences / Netherlands Institute for Neuroscience.
- **2022** - Laura Pijnacker. *Optimising phosphene vision using a realistic phosphene vision simulator.* Donders Institute / Netherlands Institute for Neuroscience.

Inventions

- Roelfsema, P. R., Balk, S., Van Veldhuizen, J., Wang, F., Monna, B., Chen, X., Li, B., **Lozano, A.**, Orlemann, C., Heemskerk, M., & Kooijmans, R. (2023). *High-density brain electrode assembly for read-out and/or stimulation of brain tissue.* International Patent Application (PCT) **WO 2023/242215 A1**. https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2023242215
- Roelfsema, P. R., Chen, X., Li, B., **Lozano Ortega, A. M.**, Wang, F., & La Grouw, M. (2024). *A computer-implemented method of mapping electrodes of a brain prosthesis.* European Patent Application **EP4368238A1**. https://patents.google.com/patent/EP4368238A1/en

Conference & Academic Talks and Lectures

2025 **Invited Speaker**, Next-generation cortical vision implants: large-scale neuroengineering design. Bionic Vision Lab, UCSB, California, US

2025 **Guest Lecturer**, NeuroAI and computational neuroscience for Biomedical Engineering. Biomedical Engineering Master, Universidad Miguel Hernandez, Elche, Alicante, Spain

2024 **Speaker** The Brain and the Chip, Neural Engineering, Artificial Vision and Intracortical Brain-Computer Interfaces, Elche, Alicante, Spain
Design lessons for next-generation cortical visual implants: Large-scale electrode planning, phosphene simulation, neural unsupervised phosphene mapping, and human-in-the-loop optimization.

2022–2025 **Guest Lecturer**, AI for Neurotechnology Donders Institute, Nijmegen, The Netherlands *(yearly)*

2023 **Invited Speaker** RIKEN Center for Brain Science, Saitama, Japan
Cortical visual prosthesis: towards deep learning endowed artificial vision for the blind

2023 **Speaker** "W17: Designing Naturalistic Sensory Feedback for Closed-Loop Brain-Computer" 10th International BCI Meeting, Brussels

2022 **Invited Speaker** The Brain and the Chip, 1st International Congress, Alicante, Spain
Neurolight: A deep learning neural interface for cortical visual prostheses

Public Talks and Seminars

2025 **Organizing Committee Member & Moderator** at the *"Cajal Encounters: Neurotechnology, Neuro-rights and Artificial Intelligence"*.
High-level scientific event fostering collaboration between Spain and the Netherlands in neuroengineering and neuroAI. Organized by CENL, RAICEX, the University of Amsterdam, and the Embassy of Spain in the Netherlands. Matrix Innovation Center, University of Amsterdam, Netherlands

2025 **Speaker:** "Más que colaboraciones, sinapsis" ("More than collaborations, synapses") roundtable at the *SCIENTIA Neuro* exhibition opening Hospital Universitario 12 de Octubre, Madrid, Spain
Interdisciplinary dialogue on neuroscience and neurotechnology, connecting Spanish research abroad with national innovation. Organized by CENL and RAICEX, supported by the Fundación Ramón Areces, the Spanish Ministry of Culture, and the Embassy of Spain in the Netherlands.

2022, 2023 **Educational talk** within the Brain Awareness Week: "CENLab: Brain implants for the blind" International School of Amsterdam, organized by CENL (Spanish Scientists in the Netherlands)

2022 **Speaker:** "Towards an AI endowed visual neuroprosthesis for the blind" at the *Segunda Conferencia NeuroCENL* (3 Dec 2022) Instituto Cervantes, Utrecht; Comisión de Neurociencia de CENL
Event report (FECYT) | CENL events page

2022 **Guest:** Neural implants and AI Radio interview at "Investigadores por el mundo" (researchers around the world)
Listen to the interview (in Spanish)

2021 **Speaker:** 'See It Your Way' NEMO Science Museum, Amsterdam

2019 **Speaker:** "Brain-Machine-Interfaces", organized by Machine Learning Tokyo. Main speakers from other events include Josh Gordon (Google AI), François Chollet (Creator of Keras, Google) and Rei Akaishi (RIKEN CBS) Earth-Life Science Institute, Tokyo Institute of Technology, Tokyo, Japan
More info on Github

2018 **Speech:** Deep Learning artificial retina for Cortical Visual Neuroprosthesis INTEL® AI DEVCAMP SERIES, Seven Spirits, Paris, France

2018 **AI podcast guest:** Daisuke Ishii Team AI Neuroscience/ML podcast with Team AI (Japan)

Internships

Collaboration Internship
2016–2017 Electronics and Computers Technology Department Technical University of Cartagena, Spain
Development of Deep Learning retina models.

Student Intern
2015–2016 Electronics and Computers Technology Department Technical University of Cartagena, Spain
Study and characterization of bioinspired systems models susceptible of specific hardware implementation.

Selected Media Coverage

Nederlands Herseninstituut New Tool Brings Us One Step Closer to Visual Implants

MIT Technology Review A New Implant for Blind People Jacks Directly Into the Brain

NPR Scientists Used a Tiny Brain Implant to Help a Blind Teacher See Letters Again

EL PAÍS English Edition Spanish Scientists Help Blind Woman to See Forms with Brain Implant

ScienceDaily Scientists Enable a Blind Woman to See Simple Shapes

Futurism New Brain Implant Lets Blind Patient See Without Eyes

University of Utah Health Scientists Enable Blind Woman To See Simple Shapes Using Brain Implant

RTVE.es Un 'chip' cerebral para volver a ver

RTL Nieuws Implantaat laat blinde Bernadette weer zien: 'Onbeschrijfelijk'

New Scientist Prothese kan blinden weer wat zicht geven

Courses, summer schools, seminars

- "NIN Summer School: Neurotechnology", June 2 – 4, 2022, Amsterdam
- "Grant Writing", ONWAR, KNAW
- "Scientific Writing", AMC
- "Machine Learning for Researchers", UPCT
- "Introduction to Python for Scientific Researchers", UPCT
- FENS-SfN Summer School, "Brain Reading and Writing: New Perspectives of Neurotechnology", Bertinoro (Italy), June 2019
- "Frontiers between Artificial Intelligence and Neuroscience", UPCT
- "Machine Learning", Stanford University-authorized Coursera
- "Neural Networks and Deep Learning", Deeplearning.ai
- "Bull High Performance Computing for Developers", SAIT UPCT

Professional Societies

- Society for Neuroscience
- BCI Society
- CENL-SWNL (Spanish Scientists in the Netherlands)

Grants and consortiums

2024–2025 **Grant holder** e-Infrastructure Grant — SURF Snellius Supercomputer (EINF-11916)
Discovery of early-life stress–induced coping strategies and resilience profiles through data-driven behavioral sequencing. Competitive national allocation of HPC resources for computational neuroscience.

Current **Member** INTENSE (Innovative Neurotechnology for Society)
Steering Committee & Career Team of the INTENSE NWO project. https://intenseproject.eu/

Ongoing **Core-team member** CORTIVIS
Development of a Cortical Visual Neuroprosthesis for the Blind. Project details available at https://clinicaltrials.gov/study/NCT02983370

Current **Advisor** Donder's Institute DCC Internal PhD/Postdoc Grant
A patient-oriented approach for using AI in visual cortical implants. Collaborators: Donders (NL), Bartimeus (NL), UMH (Spain)

2020–Present **Member** ETHEREAL: Human-Robot Interaction for Emotional Psychoeducational Interventions
Funded by the Ministry of Science and Innovation of Spain, PID2020-115220RB-C22

Honors

- **2025 SfN Trainee Professional Development Award (TPDA)** — Antonio Manuel Lozano Ortega, Postdoctoral Fellow, Miguel Hernández University. Recognized at the Neuroscience 2025 annual meeting (San Diego, USA, Nov. 15–19, 2025). *Human-in-the-loop optimisation for efficient intracortical microstimulation temporal patterns in visual cortex.*
- **2024 Computable Award — Digital Innovation** — Team winner for "*Visual prosthesis for the blind*" (Donders Institute & Netherlands Institute for Neuroscience), Utrecht (Jaarbeurs, De Polar), 27 Nov 2024.
- **PhD, Information and Communication Technologies** — Graduated *Cum Laude* from Polytechnic University of Cartagena (UPCT), Cartagena, Spain.
- **2018–2019 Member of Intel's Software Innovators Program**
- **2017 ERASMUS Grant** — Awarded for international study exchange at Politecnico di Milano, focusing on Biomedical Engineering.

Academic Service

- Ad-hoc Reviewer. **Brain Stimulation**

Skills

Neurophysiology.
Experiment design (NHP & human), high-channel count cortical neural recordings (NHP, Blackrock Neurotech & Ripple Neuro equipment), intracortical microstimulation (NHP & human, Blackrock Neurotech & Ripple Neuro equipment), Neural Signal Processing and modeling (mice, NHP and human) and NHP behavioral training.

Clinical roadmap.
I've been a core-team member of the first-in-human intracortical visual neuroprosthesis trial within CORTIVIS. I have also worked on translational research in Amsterdam and in the clinical efforts at NIN together with the neurotech startup Phosphoenix, in the framework of the INTENSE consortium.

Brain implant design and testing.
Receptive Field and anatomy-aware optimization of intracortical electrodes design and location. 3D software for brain segmentation & electrode planning in NHP and Human (3D Slicer, Freesurfer, BrainVoyager, and open-source in-house developed software). Team management on mechanical-electronics design for implant insertion procedures. Implant testing in-silico and ex-vivo.

AI and Computational Neuroscience.
Extensive experience applying Machine Learning and Deep Learning on computational neuroscience modeling, Computer Vision for Neural Interfaces (Neurolight) and industrial applications (Hongo Aerospace, Tokyo).
PyTorch based phosphene vision simulation and optimization pipelines. Supervised/unsupervised learning and Dimensionality reduction for neural data analysis and high-channel count phosphene mapping. ML retina models modeling of neural responses. DL models for encoding and reconstruction of naturalistic images along the NHP cortical visual stream. AI and HMM-based behavioral tracking, inference, and dynamics sequencing (DeepLabCut, SIMBA, keypoint MoSeq)

Programming. Python (numpy, SciPy, scikit-learn, PyTorch, Keras, TensorFlow, model compression/acceleration with TensorRT & ONNX) and MATLAB. Some previous experience with C/C++ and Java. Experiment software design (neural stimulation, behavioral experiments, psychophysics). AI-endowed Neural Interfaces (e.g. Neurolight API) integrating state-of-the-art computer vision, with intracortical neurostimulation.

Edge-computing & microcontrollers. NVIDIA Jetson Nano/TX2, INTEL's Neural Compute Stick and Arduino; brief experience with PLCs and the Texas Instruments' C2000 microcontroller.

Soft skills. I am a great collaborative-team builder and highly enjoy working with other people, who usually appreciate my enthusiasm and love for the neuroengineering field.
As a co-leader within the INTENSE neurotech consortium, I have experience working with international consortia (CORTIVIS, INTENSE, NeuraViPer) and international research teams (Spain, U.S., Netherlands, Germany, Italy, Japan).
I have experience promoting inter-disciplinar collaboration: integrating knowledge, technology, and people across the wide fields of experimental neuroscience, computational neuroscience, diverse engineering fields, and AI, within a translational approach to brain implants.
I am lucky to learn and be mentored by some of the pioneers and visionary researchers in the neural prosthesis field, and enjoy mentoring students as well as learning from bright and motivated colleagues and collaborators.
Finally, I am familiar with communicating with blind organization representatives and members , medical doctors and surgeons, academic researchers, patent attorneys, engineers in industry, startups, and regulatory consultants.