Lucas Gil Nadolskis

PhD Student, Dynamical Neuroscience · University of California, Santa Barbara
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Research Interests

I work to improve the lives of people with vision loss through research in visual prosthetics, brain–computer interfaces, computer vision, and assistive technology. My work sits at the intersection of computer science, biomedical engineering, and neuroscience, with a focus on the real-world usability and safety of cortical and retinal implants for blind users.

Education

Ph.D. in Dynamical Neuroscience 2023 – present
University of California, Santa Barbara — Advisor: Dr. Michael Beyeler (Bionic Vision Lab)

M.S. in Computational Biomedical Engineering 2023
Carnegie Mellon University, Pittsburgh, PA — Advisor: Prof. Matthew Smith
Thesis: *Exploring top-down visual pathways using micro-stimulation and its applications to cortical visual prosthesis*

B.S. in Computer Science, Minor in Neuroscience 2021
University of Minnesota, Twin Cities

Study Abroad — Queen Mary University of London 2018
Coursework in computer science and neuroscience (July–December 2018).

Peer-Reviewed Publications

- F. Elavsky, **L. Nadolskis**, D. Moritz. "Data Navigator: An Accessibility-Centered Data Navigation Toolkit." *IEEE Transactions on Visualization and Computer Graphics* 30(1):803–813 (IEEE VIS), 2023. DOI · arXiv
- **L. Nadolskis***, L. M. Turkstra*, E. Larnyo, M. Beyeler. "Aligning visual prosthetic development with implantee needs." *Translational Vision Science & Technology* 13(11):28, 2024. (*equal contribution) DOI · PMC
- A. Arora, **L. Nadolskis**, M. Beyeler, M. Sra. "VisionAI — Shopping Assistance for People with Vision Impairments." *IEEE ISMAR-Adjunct*, 2024. DOI
- A. Varshney, **L. Nadolskis**, T. Höllerer, M. Beyeler. "Navigating the Last Mile: Evaluating Head- and Cane-Mounted Cameras for Egocentric Spatial Awareness." *IEEE ISMAR*, 2026. arXiv
- **L. Nadolskis**. "Use of Computer Vision to Develop a Device to Assist Visually Impaired People with Social Distance." *AAAI Conference on Artificial Intelligence* 35(18):15974–15975 (Undergraduate Consortium), 2021. DOI

Preprints, Workshop Papers & Abstracts

- J. Granley*, G. Pogoncheff*, A. Rodil, L. Soo, L. M. Turkstra, **L. G. Nadolskis**, A. Alfaro Saez, C. Soto Sanchez, E. Fernandez Jover, M. Beyeler. "Beyond Sight: Probing Alignment Between Image Models and Blind V1." *ICLR 2024 Workshop on Representational Alignment (Re-Align)*. arXiv · OpenReview
- **L. Nadolskis**, G. Pogoncheff, J. Granley, A. Rodil, L. Soo, L. Turkstra, et al. "Sustained stimulus-selective multi-unit activity in human primary visual cortex." *Journal of Vision* 24(10):1216 (VSS), 2024. DOI
- **L. Nadolskis**. "Applying novel technologies to assist visually impaired people with social distance measures." Poster, *Grace Hopper Celebration*, 2020.

Invited Talks & Presentations

The Vision of a Blind Scientist: Journey, Challenges, and the Future of Visual Prostheses 2025
Invited talk (with M. Beyeler), 11th World Blindness Summit, São Paulo, Brazil. Program

Sustained stimulus-selective multi-unit activity in human primary visual cortex 2024
Talk, Vision Sciences Society (VSS), St. Pete Beach, FL.

Accessibility in research labs and conferences 2024
Invited speaker, VSS Enhancing Accessibility Workshop, St. Pete Beach, FL.

Assistive device for social distancing for blind users 2021
3-minute pitch, AAAI-21 Undergraduate Consortium. Video

Service & Conference Organization

Organizing Committee — 2nd Workshop on Accessible Data Visualization (AccessViz) 2025
IEEE VIS 2025, Vienna, Austria. Workshop

Organizing Committee — 1st Workshop on Accessible Data Visualization (AccessViz) 2024
IEEE VIS 2024, St. Pete Beach, FL. Workshop

Consumer Advisory Board — Neuralink BlindSight 2024 – present
Advise on device functionality, surgical and clinical study considerations, user experience targets, post-study support, and privacy/security for cortical implants for blind individuals.

Scholar & Advisory Board — NEVE Project 2023 – present
STEM scholarship recipient and mentor. Profile

Research Experience

Bionic Vision Lab, UC Santa Barbara 2023 – present
Graduate researcher with Dr. Michael Beyeler on cortical implants, the Smart Bionic Eye, and assistive mobility technologies for blind and low-vision users.

Smith Lab, Carnegie Mellon University 2021 – 2023
Studied neural decoding in prefrontal cortex and visual area V4 using micro-stimulation in non-human primates, characterizing V4 activity driven by PFC stimulation.

Catherine Qi Zhao Lab, University of Minnesota 2019 – 2021
Developed neural spike-sorting algorithms for noise reduction and led research on accessible computer-vision methods for blind and low-vision users.

Minnesota Laboratory for Low-Vision Research (Gordon Legge), University of Minnesota
Investigated mobility in blind individuals, focusing on veering during straight-line walking.

Hyun Soo Park Lab, University of Minnesota 2015 – 2018
Developed computer-vision algorithms for autonomous navigation for blind and low-vision people.

Industry & Professional Experience

cyberTimez — Computer Vision Developer 2015 – 2017
Built computer-vision algorithms for Cyber Eyez, smart-glasses software that magnifies objects up to 15× and reads text in 100+ languages offline for blind and low-vision users.

MIND Research Institute — Accessibility Specialist 2018
Developed accessible educational STEM games for visually impaired learners.

Media & Public Engagement

- "How Does Vision Work?" — Tumble Science Podcast for Kids, 2025.
- "Towards a Smart Bionic Eye" — NNLM Discovery Podcast (National Library of Medicine), 2024.
- "NeurodiverCity" (Ep. 200P) — What is the Future for Cities?, 2024.
- "A Future Where Blindness Is No Barrier: The Smart Bionic Eye" — NLM blog (NIH), 2024.
- UCSB "Seeing the Future" feature — The Current, UC Santa Barbara, 2024.
- "At a Loss for a McCartney Ticket" — letter on digital accessibility, Santa Barbara Independent, 2025.

Awards & Honors

- Regents/Regency Fellowship, University of California, Santa Barbara
- NEVE Project STEM Scholar
- AAAI-21 Undergraduate Consortium Scholar

- Invited Speaker, VSS Enhancing Accessibility Workshop, 2024

Skills & Languages

- **Programming:** Python, MATLAB, C++, Java, R
- **ML & tools:** TensorFlow, computational modeling, neural decoding, computer vision
- **Other:** Accessible design, LaTeX
- **Languages:** Portuguese (native), English (fluent), Spanish (conversational)