

# Michael Beyeler

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Email: mbeyeler@ucsb.edu  
Lab: bionicvisionlab.org  
Faculty Profile: CS, PBS

## ACADEMIC APPOINTMENTS

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- **Assistant Professor** · Computer Science (CS) · Psychological & Brain Sciences (PBS) 2019 – present  
Associate Director · Research Center for Virtual Environments and Behavior (ReCVEB)  
*University of California, Santa Barbara (UCSB)*  
Affiliations: Electrical & Computer Engineering (ECE) · Biological Engineering (BioE) · Dynamical Neuroscience (DYNs)
- **Postdoctoral Fellow** · Psychology · Institute for Neuroengineering · eScience Institute 2016 – 2019  
*University of Washington (UW)*

## EDUCATION

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- **PhD in Computer Science** · Specialization in Computational Neuroscience 2012 – 2016  
*University of California, Irvine (UCI)*  
Dissertation: Cortical neural network models of visual motion perception for decision-making and reactive navigation, May 2016. Committee: JL Krichmar (chair), N Dutt (co-chair), C Fowlkes
- **MS in Biomedical Engineering** · Focus on Bioelectronics 2009 – 2011  
*ETH Zurich, Switzerland*
- **BS in Electrical Engineering** · Major in Micro- and Optoelectronics 2005 – 2009  
*ETH Zurich, Switzerland*

## HONORS & AWARDS

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### Major Fellowships, Honors & Awards

- DP2 New Innovator Award: *National Institutes of Health (NIH)* 2022
- K99/R00 Pathway to Independence Award: *NIH* 2018
- Innovation in Neuroengineering & Data Science Postdoctoral Fellowship: *Gordon & Betty Moore Foundation, Alfred P. Sloan Foundation, Washington Research Foundation (WRF)* 2016
- Chair's Fellowship for Outstanding PhD Applicants: *UCI* 2012

### Best Paper Award Nominations

- Honorable Mention Best Paper Award (top 4%): C9, *Augmented Humans (AHs)* 2021
- Nominee: Best Student Paper, C6, *IEEE International Joint Conference on Neural Networks (IJCNN)* 2018
- Nominee: Best Student Paper, C1, *IEEE Biomedical Circuits & Systems Conference (BioCAS)* 2010

### Other Conference Awards

- Best Poster Award (best of 15): W3, *Augmented Humans (AHs)* 2022
- Abstract of Distinction (top 3%): A34, *Association for Research in Vision & Ophthalmology (ARVO)* 2020
- Best Poster Award: A19, *Eye & Chip World Congress on Artificial Vision* 2017
- Presenters Travel Award, A15: *Computational & Systems Neuroscience (COSYNE)* 2017
- Best Workshop Talk Award: A6, *IEEE International Conference on Robotics & Automation (ICRA)* 2014

### Other Academic Awards

- Nominee: Academic Senate Outstanding Graduate Mentor Award, *UCSB* 2022
- Finalist: Postdoc Mentoring Award, *UW* 2019

## SELECTED MENTEE HONORS & AWARDS

### Graduate Students

- Aiwen Xu: Presenters Travel Award, COSYNE '23, *Simons Foundation, Reality Labs, Burroughs Wellcome Fund, The Gatsby Charitable Foundation* 2023
- Alex Rasla, C15: Gary Marsden Travel Award, VRST '22, *SIGCHI* 2022
- Ashley Bruce: Outstanding MS Student Award, *CS, UCSB* 2022
- Byron Johnson, A44: Travel Award, Biennial Perceptual Learning Workshop, *NIH* 2022
- Byron Johnson: Travel Award, CSHL Computational Neuroscience–Vision, *Helmsley Charitable Trust* 2022
- Ezgi I. Yücel: Innovation in Neuroengineering Graduate Fellowship, *WRF* 2017

### Undergraduate Students

- Yuchen Hou: Abdullah & Marjorie R. Nasser Memorial Scholarship Fund Award, *PBS, UCSB* 2022
- Tanya Bhatia: Undergraduate Poster Presentation Award, *National Diversity in STEM Conference, Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS)* 2021
- Nathan Wu: Outstanding Undergraduate Research Award, *CS, UCSB* 2021
- Jon Luntzel: Innovation in Neuroengineering Undergraduate Fellowship, *WRF* 2019

## RESEARCH GRANTS & OTHER SUPPORT

*Our share, total: \$3.12M, as PI: \$2.39M*

### Active Funding

- DP2 LM014268: Towards a *Smart Bionic Eye*: AI-powered artificial vision for the treatment of incurable blindness, *NIH*. PI: **M Beyeler**. (\$1,250,136) 2022 – present
- Visual navigation under high-stress conditions: Improving situational awareness through deep-learning based vision augmentation in immersive virtual training environments, *Army's Institute for Collaborative Biotechnologies*. PIs: **M Beyeler**, M Hegarty, S Grafton, B Giesbrecht. (Our share: \$150,000) 2021 – present
- R01 NS121919: Cortical visual processing for navigation, *NIH*. PI: S Smith. Co-PIs; M Goard, C Niell. Co-I: **M Beyeler**. (Our share: \$718,387) 2021 – present
- K99/R00 EY029329: Virtual prototyping for retinal prosthesis patients, *NIH*. PI: **M Beyeler**. (\$968,319) 2018 – present

### Completed Funding

- Event-based scene understanding for bionic vision, *UCSB Academic Senate Research Faculty Grant*. PI: **M Beyeler**. (\$10,000) 2021 – 2022
- An inaugural data science summit at UCSB, *Academic Data Science Alliance (ADSA)* PI: A Frank. Co-PIs: A Horst, **M Beyeler**. (\$9,258) 2021
- Eye tracking in immersive virtual environments, *UCSB Academic Senate Research Faculty Grant*. PI: M Hegarty. Co-PI; **M Beyeler**. (\$5,099) 2020 – 2021
- Cloud Credits for Research, *Amazon Web Services (AWS)* (\$10,000) 2017

## ACADEMIC MENTORING

### Postdoctoral Scholars

*Total: 2*

- Amirali Vahid, Institute for Collaborative Biotechnologies (ICB), *UCSB* 2022 – 2023
- Melani Sanchez-Garcia, *CS, UCSB* 2022 – 2023

### PhD Advisees · Chair

*Total: 6*

- Galen Pogoncheff, *CS, UCSB* 2022 – present
- Yuchen Hou, *CS, UCSB* 2022 – present
- Byron Johnson, *PBS, UCSB* (co-chair: Miguel Eckstein, *PBS*) 2020 – present

- Jacob Granley, CS, *UCSB* 2020 – present
- Aiwen Xu, CS, *UCSB* 2020 – present
- Justin Kasowski, Dynamical Neuroscience (DYNS), *UCSB* 2019 – present

**PhD Advisees · Committee Member***Total: 7*

- Neeli Tummala, ECE, *UCSB* S'22 – present
- Dengxian Yang, CS, *UCSB* S'22 – present
- Jeong-Jun Lee, ECE, *UCSB* S'22 – present
- Shravan Murlidaran, PBS, *UCSB* F'21 – present
- Yuqin Wang, CS, *UCSB* M'21 – present
- Sudhanshu Srivastava, DYNS, *UCSB* S'21 – present
- Wenrui Zhang, ECE, *UCSB* W'21 – M'21

**PhD Advisees · External Examiner***Total: 4*

- Jack White, *Swinburne University of Technology, Melbourne, Australia* W'22
- Melani Sanchez Garcia, *Universad de Zaragoza, Spain* W'22
- Tristan Fauvel, *Institute de la Vision, Sorbonne Université, Paris, France* F'21
- Kexin Chen, *Cognitive Sciences, UCI* S'20

**MS Advisees · Chair***Total: 8*

- Kimia Afshari, CS, *UCSB* F'22 – present
- Apurv Varshney, CS, *UCSB* F'21 – present
- Madori Spiker, CS, *UCSB* F'21 – S'22
- Alex Rasla, CS, *UCSB* F'21 – S'22
- Lucas Relic, CS, *UCSB* W'22 – S'22
- Ashley Bruce, CS, *UCSB* W'22 – S'22
- Ziming Qi, CE, *UCSB* F'20 – F'21
- Zuying (Collin) Hu, CS, *UCSB* W'20 – M'21

**MS Advisees · Committee Member**

- Satyam Awashti, CS, *UCSB* W'23

**Staff Scientists***Total: 2*

- Lily Turkstra, Junior Specialist, *UCSB* F'22 – present
- Ryan Neydavood, Junior Specialist, *UCSB* M'21 – S'22

**Undergraduate Honor Advisees***Total: 8*

- Ethan Meade, Distinction in the Major Program (DIMAP), CS, *UCSB* W'23 – present
- Lauren Eckhardt, Honors Program, PBS, *UCSB* F'22 – present
- Anvitha Akkaraju, Honors Program, PBS, *UCSB* F'21 – S'22
- Tanya Bhatia, Honors Program, PBS, *UCSB* F'21 – S'22
- Bill Nguyen, Honors Program, PBS, *UCSB* F'21 – S'22
- Rachel Mochizuki, Honors Program, PBS, *UCSB* W'21 – M'21
- Yang (Nathan) Wu, DIMAP, CS, *UCSB* W'21 – S'21

**UC LEADS Mentorship Program Advisees**

- Kha Nguyen, BS Student, Bioengineering, *University of California, San Diego (UCSD)* M'20

**High School Advisees**

Total: 9

- Shivani Sama, *Tesla STEM High School, Redmond, WA* F'22 – present
- Andre Mao, UCSB Research Mentorship Program (RMP), *Homestead High School* M'21
- Chitsein Htun, UCSB RMP, *North Hollywood High School* M'21
- Emma Gao, UCSB RMP, *The Harker School* M'21
- Lisa Li, UCSB RMP, *Texas Academy of Mathematics and Science* M'21
- Surya Jasper, UCSB RMP, *Saint Francis High School* M'21
- Yash Jain, UCSB RMP, *Moreau Catholic High School* M'21
- Ethan Gao, UCSB RMP, *Ojai Valley School* M'20
- Versha Rohatgi, UCSB RMP, *Mountain View High School* M'20, M'21

**ACADEMIC SERVICE****University-Wide Committees**

- Member, CS Representative: Faculty Legislature, *UCSB* 2020 – 2022
- Postdoctoral Representative: Research Advisory Board, *UW* 2017 – 2019

**Departmental Committees**

- Member: Diversity, Equity, and Inclusion Committee, *CS, UCSB* 2022 – present
- Member: Graduate Admissions Committee, *DYNS, UCSB* 2021 – present
- Public Relations Committee, *CS, UCSB* 2019 – present
  - Co-chair, 2020 – 2021
  - Member, 2019 – 2020, 2021 – present
- Member: Graduate Admission Committee, *CS, UCSB* 2019 – 2020

**Institutional Working Groups**

- Member: Neuroinformatics Special Interest Group, *eScience Institute & UWIN, UW* 2017 – 2019
- Member: Reproducibility Working Group, *eScience Institute, UW* 2016 – 2018

**Organized Workshops & Summits**

- Steering Committee Member: 2022 Mind & Machine Intelligence Summit, *UCSB* 2021 – 2022
- Co-organizer: 2021 UCSB Data Science Summit, *UCSB* 2020 – 2021
- Organizer: Recent Computational Advances in Neuroengineering, Workshop, *Computational & Systems Neuroscience (COSYNE)* 2018

**Editorial Boards**

- Review Editor: *Frontiers in Human Neuroscience* 2020 – present
- Review Editor: *Frontiers in Neurorobotics* 2017 – 2020

**Ad-Hoc Reviewing · Grants**

- Reviewer, CDMRP VRP TECH, *Department of Defense (DoD)* 2022
- Reviewer, ZGM1 RCB-9 (CG), *NIH* 2021
- Early Career Reviewer (ECR), ZRG1 ETTN-P (81), *NIH* 2021

**Ad-Hoc Reviewing · Selected Journals**
[publons.com/researcher/1188259/michael-beyeler](https://publons.com/researcher/1188259/michael-beyeler)

ACM Journal on Emerging Technologies in Computing Systems (JETC) · eLife · Frontiers in Human Neuroscience · Frontiers in Neuroscience · IEEE Transactions on Neural Networks & Learning Systems (TNNLS) · Journal of Neural Engineering · Journal of Neuroscience · Journal of Vision · Nature Biomedical Engineering · Neural Networks · PLoS Computational Biology · Science Advances · Sensors · Vision Research

## Ad-Hoc Reviewing · Selected Conferences

ACM Conference on Human Factors in Computing Systems (CHI) · Computational & Systems Neuroscience (COSYNE) · IEEE Conference on Virtual Reality and 3D User Interfaces (VR) · IEEE International Conference on Intelligent Robots & Systems (IROS) · IEEE International Symposium on Mixed and Augmented Reality (ISMAR) · Medical Image Computing & Computer Assisted Intervention (MICCAI)

## PUBLICATIONS

[scholar.google.com/citations?user=dK-0kG4AAAAJ](https://scholar.google.com/citations?user=dK-0kG4AAAAJ)

Note that in many areas of computer science, *conferences* are the primary venue for peer-reviewed publications, with selectivity and impact often exceeding that of journals (Chen & Konstan, 2010). The opposite is true in neuroscience. Legend: \* equal contribution, ① invited publication, ② review/survey article

### Refereed Journal Articles

- J13 **M Beyeler**, M Sanchez-Garcia (2022). Towards a *Smart Bionic Eye*: AI-powered artificial vision for the treatment of incurable blindness. *Journal of Neural Engineering* 19:063001.
- J12 El Yücel, R Sadeghi, A Kartha, SR Montezuma, G Dagnelie, A Rokem, GM Boynton, I Fine, **M Beyeler** (2022). Factors affecting two-point discrimination in Argus II patients. *Frontiers in Neuroscience* 16:901337.
- J11 K Chen, **M Beyeler**, JL Krichmar (2022). Cortical motion perception emerges from dimensionality reduction with evolved spike-timing dependent plasticity rules. *Journal of Neuroscience*. **Featured research article**
- J10 RB Esquenazi, KM Meier, **M Beyeler**, GM Boynton, I Fine (2021). Learning to see again: Perceptual learning of simulated abnormal on- off- cell population responses in sighted individuals. *Journal of Vision* 21(13): 1–20.
- J9 BW Brunton, **M Beyeler** (2019). Data-driven models in human neuroscience and neuroengineering<sup>①②</sup>. *Current Opinion in Neurobiology* 58: 21–29.
- J8 **M Beyeler**, D Nanduri, JD Weiland, A Rokem, GM Boynton, I Fine (2019). A model of ganglion axon pathways accounts for percepts elicited by retinal implants. *Scientific Reports* 9(1):9199. [Code] [Data]
- J7 **M Beyeler** (2019). Commentary: Detailed visual cortical responses generated by retinal sheet transplants in rats with severe retinal degeneration. *Frontiers in Neuroscience* 13: 471.
- J6 **M Beyeler\***, EL Rounds\*, KD Carlson, N Dutt, JL Krichmar (2019). Neural correlates of sparse coding and dimensionality reduction<sup>②</sup>. *PLOS Computational Biology* 15(6):e1006908.
- J5 **M Beyeler**, A Rokem, GM Boynton, I Fine (2017). Learning to see again: Biological constraints on cortical plasticity and the implications for sight restoration technologies<sup>②</sup>. *Journal of Neural Engineering* 14(5). **Featured cover article**
- J4 **M Beyeler**, N Dutt, JL Krichmar (2016). 3D visual response properties of MSTd emerge from an efficient, sparse population code. *Journal of Neuroscience* 36(32): 8399–8415.
- J3 **M Beyeler**, N Oros, N Dutt, JL Krichmar (2015). A GPU-accelerated cortical neural network model for visually guided robot navigation. *Neural Networks* 72: 75–87.
- J2 **M Beyeler**, M Richert, ND Dutt, JL Krichmar (2014). Efficient spiking neural network model of pattern motion selectivity in visual cortex. *Neuroinformatics*, 1–20.
- J1 **M Beyeler**, ND Dutt, JL Krichmar (2013). Categorization and decision-making in a neurobiologically plausible spiking network using a STDP-like learning rule. *Neural Networks* 48C: 109–124.

### Refereed Conference Publications

- C15 A Rasla, **M Beyeler** (2022). The relative importance of depth cues and semantic edges for indoor mobility using simulated prosthetic vision in immersive virtual reality. *ACM Symposium on Virtual Reality Software and Technology (VRST)*, Virtual/Tsukuba, Japan.
- C14 J Granley, L Relic, **M Beyeler** (2022). A hybrid neural autoencoder for sensory neuroprostheses and its applications in bionic vision. *36th Conference on Neural Information Processing Systems (NeurIPS)*, New Orleans, LA.
- C13 A Bruce, **M Beyeler** (2022). Greedy optimization of electrode arrangement for epiretinal prostheses. *Medical Image Computing & Computer Assisted Intervention (MICCAI)*, Singapore. **Highlighted in MICCAI Daily**

- C12 J Kasowski, **M Beyeler** (2022). Immersive virtual reality simulations of bionic vision. *Augmented Humans (AHs)*, online. [Code] [Video]
- C11 J Granley, **M Beyeler** (2021). A computational model of phosphene appearance for epiretinal prostheses. *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, online. [Code]
- C10 Z Hu, **M Beyeler** (2021). Explainable AI for retinal prostheses: Predicting electrode deactivation from routine clinical measures. *IEEE EMBS Conference on Neural Engineering (NER)*, online.
- C9 N Han, S Srivastava<sup>o</sup>, A Xu<sup>o</sup>, D Klein, **M Beyeler** (2021). Deep learning-based scene simplification for bionic vision. *Augmented Humans (AHs)*, online. [Code] [Data] **Honorable Mention Award (top 4 %)**
- C8 **M Beyeler**, GM Boynton, I Fine, A Rokem (2019). Model-based recommendations for optimal surgical placement of epiretinal implants. *Medical Image Computing & Computer Assisted Intervention (MICCAI)*, Shenzhen, China.
- C7 **M Beyeler** (2019). Biophysical model of axonal stimulation in epiretinal visual prostheses. *IEEE EMBS Conference on Neural Engineering (NER)*, San Francisco, CA.
- C6 T-S Chou<sup>o</sup>, HJ Kashyap<sup>o</sup>, J Xing, S Listopad, EL Rounds, **M Beyeler**, N Dutt, JL Krichmar (2018). CARLsim 4: An open source library for large scale, biologically detailed spiking neural network simulations using heterogeneous clusters. *IEEE International Joint Conference on Neural Networks (IJCNN)*, Rio de Janeiro, Brazil. **Best Student Paper Nominee**. [Code]
- C5 **M Beyeler**, GM Boynton, I Fine, A Rokem (2017). pulse2percept: A Python-based simulation framework for bionic vision. *Scientific Computing with Python (SciPy)*, p.81–88. [Code] [Talk]
- C4 **M Beyeler\***, KD Carlson\*, T-S Chou\*, N Dutt, JL Krichmar (2015). CARLsim 3: A user-friendly and highly optimized library for the creation of neurobiologically detailed spiking neural networks. *IEEE International Joint Conference on Neural Networks (IJCNN)*, Killarney, Ireland. [Code]
- C3 KD Carlson, **M Beyeler**, N Dutt, JL Krichmar (2014). GPGPU accelerated simulation and parameter tuning for neuromorphic applications<sup>o</sup>. *Asia and South Pacific Design Automation Conference (ASP-DAC)*, Suntec, Singapore.
- C2 **M Beyeler**, F Mirus, A Verl (2014). Vision-based robust road lane detection in urban environments. *IEEE International Conference on Robotics & Automation (ICRA)*, Hong Kong, China.
- C1 **M Beyeler**<sup>o</sup>, F Stefanini<sup>o</sup>, H Proske, CG Galizia, E Chicca (2010). Exploring olfactory sensory networks: simulations and hardware emulation. *IEEE Biomedical Circuits & Systems Conference (BioCAS)*, Paphos, Cyprus. **Best Student Paper Nominee**.

#### **Refereed Workshop & Lightly Reviewed Short Papers**

- W5 J Granley, A Riedel, **M Beyeler** (2022). Adapting brain-like neural networks for modeling cortical visual prostheses. *SVRHM Workshop, NeurIPS*, New Orleans, LA.
- W4 M Sanchez-Garcia, T Chauhan, BR Cottureau, **M Beyeler** (2022). Efficient visual object representation using a biologically plausible spike-latency code and winner-take-all inhibition. *NeuroVision Workshop, IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, online.
- W3 L Relic, B Zhang, YL Tuan, **M Beyeler** (2022). Deep learning-based perceptual stimulus encoder for bionic vision. *Augmented Humans (AHs)*, online. [Video] **Best Poster Award**
- W2 S Tang, Z Qi, J Granley, **M Beyeler** (2021). U-Net with hierarchical bottleneck attention for landmark detection in fundus images of the degenerated retina. *OMIA8 Workshop, MICCAI*, online.
- W1 J Kasowski, N Wu, **M Beyeler** (2021). Towards immersive virtual reality simulations of bionic vision. *Augmented Humans (AHs)*, online.

#### **US Patent Applications**

- PA2 R Appuswamy, **M Beyeler**, P Datta, MD Flickner, DS Modha (2018). Long short-term memory (LSTM) on spiking neuromorphic hardware. US Patent App 15/434,672.
- PA1 **M Beyeler**, ND Dutt, JL Krichmar (2017). Sparse and efficient neuromorphic population coding. US Patent App 15/417,626.

### Selected Contributed Abstracts & Poster Presentations

- A46 Y Hou, A Xu, D Martins, A Vahid, E Abe, C Niell, **M Beyeler** (2023). Retinal scene statistics for freely moving mice. *COSYNE '23*, Montreal, Canada (poster)
- A45 A Xu, **M Beyeler** (2023). A biophysically detailed model of retinal degeneration. *COSYNE '23*, Montreal, Canada (poster, **A Xu: Travel Award**)
- A44 BA Johnson, PN Chakravarthula, S Murlidaran, A Soni, **M Beyeler**, MP Eckstein (2022). The effect of a simulated scotoma on rapid scene understanding. *Biennial Perceptual Learning Workshop*, Anchorage, AK. (poster, **B Johnson: Travel Award**)
- A37 T Bhatia, Y Hou, J Granley, B Johnson, **M Beyeler** (2021). Nonlinear interactions with the retina shape the artificial vision generated by a bionic eye. *SACNAS National Diversity in STEM Conference (NDiSTEM) '21*, online. (**T Bhatia: Undergraduate Poster Presentation Award**)
- A34 **M Beyeler**, GM Boynton, I Fine, A Rokem (2020). Interpretable machine-learning predictions of perceptual sensitivity for retinal prostheses. *Association for Research in Vision & Ophthalmology (ARVO) '20*, Baltimore, MD. (**Abstract of Distinction, top 3 %**; canceled, COVID-19)
- A20 **M Beyeler**, A Rokem, GM Boynton, I Fine (2017). Reverse-engineering optimized stimulation protocols in epiretinal prosthesis patients. *The Eye & the Chip '17*, Detroit, MI. (oral, **Platform Presentation**)
- A19 GM Boynton, A Rokem, **M Beyeler**, J Dorn, NC Sinclair, MN Shivdasani, MA Petoe, R Hornig, I Fine (2017). Efficient and scalable measurements of sensitivity for high resolution electrode arrays. *The Eye & the Chip '17*, Detroit, MI. (poster, **Best Poster Award**)
- A6 **M Beyeler**, M Richert, N Oros, N Dutt, JL Krichmar (2014). A cortical spiking neural network model for visually guided robot navigation. Neurobiologically Inspired Robotics workshop, *ICRA'14*, Hong Kong, China. (oral, **Best Student Talk Award**).
- A1 **M Beyeler**, ND Dutt, JL Krichmar (2013). Spiking neural network model of visual pattern recognition and decision-making using a stochastic STDP learning rule. *JSNC'13*, Pasadena, CA. (poster)

### INVITED EXTERNAL TALKS & SEMINARS

#### Scheduled

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| T28 60th Anniversary Conference, <i>Smith-Kettlewell Eye Research Institute, San Francisco, CA</i>     | Aug 2023 |
| T27 Neuroscience + AI Seminar, <i>Carnegie Mellon University</i>                                       | Apr 2023 |
| T26 20th Annual World Congress of the Society for Brain Mapping & Therapeutics, <i>Los Angeles, CA</i> | Feb 2023 |

#### Past

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|---|----------|
| T25 Braille Institute, <i>Santa Barbara, CA</i>   | Jan 2023 |
| T24 Science & Engineering Council of Santa Barbara, <i>Santa Barbara, CA</i>  | Dec 2022 |
| T23 Optica Fall Vision Meeting, <i>Rochester, NY</i>  | Oct 2022 |
| T22 San Marcos High School, <i>Goleta, CA</i>   | Oct 2022 |
| T21 NeuroVision Workshop, <i>CVPR '22, New Orleans, LA</i>  | Jun 2022 |
| T20 Translational Neuroengineering Technologies (TNT) Network, <i>Johns Hopkins University</i>  | Apr 2022 |
| T19 Tri-Service Research Laboratory (TSRL), Air Force, <i>JBSA-Fort Sam Houston, TX</i>   | Mar 2022 |
| T18 Universidad Miguel Hernandez, <i>Elche, Spain</i>   | Feb 2022 |
| T17 Claremont Colleges, <i>Claremont, CA</i>  | Oct 2021 |
| T16 Eye & Chip World Congress on Artificial Vision (plenary), <i>Detroit Institute of Ophthalmology</i>   | Oct 2021 |
| T15 17th Annual World Congress of the Society for Brain Mapping & Therapeutics, <i>Los Angeles, CA</i>  | Jul 2021 |
| T14 14th Conference on Learning & Memory: Cellular and Systemic Views (canceled, COVID-19)<br><i>Leibniz Institut für Neurobiologie, Magdeburg, Germany</i> | Mar 2020 |
| T13 Department of Cognitive Sciences, <i>University of California, Irvine, CA</i>   | Apr 2019 |
| T12 Department of Computer Science, <i>Duke University, Durham, NC</i>  | Mar 2019 |
| T11 Department of Computer Science, <i>University of California, Santa Barbara, CA</i>  | Jan 2019 |

T10	Recent Advances in Neuroengineering Workshop, <i>COSYNE '18, Breckenridge, CO</i>	Mar 2018
T9	Center for Applied and Translational Sensory Science (CATSS), <i>University of Minnesota, Minneapolis, MN</i>	Feb 2018
T8	Eye & Chip World Congress on Artificial Vision (plenary), <i>Detroit Institute of Ophthalmology</i>	Sep 2017
T7	Cluster of Excellence in Cognitive Interaction Technology (CITEC), <i>Bielefeld University, Germany</i>	Aug 2017
T6	Center for Perceptual Systems, <i>University of Texas, Austin, TX</i>	Jul 2017
T5	UW Medicine Eye Institute, <i>University of Washington, Seattle, WA</i>	Feb 2017
T4	Second Sight Medical Products Inc., <i>Sylmar, CA</i>	Nov 2016
T3	Department of Psychology, <i>University of Washington, Seattle, WA</i>	Dec 2015
T2	IBM Research, <i>San Jose, CA</i>	Aug 2015
T1	Qualcomm Technologies Incorporated, <i>San Diego, CA</i>	Nov 2014

## TEACHING ACTIVITIES

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### Undergraduate Courses

UC2	CS/ECE-181: Introduction to Computer Vision, <i>UCSB</i>	W'21, F'22
UC1	PSYCH-130: Sensation & Perception · Vision, <i>UCSB</i>	F'20

### Graduate Courses

GC3	CS/ECE-281B: Advanced Topics in Computer Vision, <i>UCSB</i>	W'23
GC2	PSY-221F: Computational Neuroscience	S'22
GC1	CS-291A: Bionic Vision, <i>UCSB</i>	W'20, F'21

### Selected Guest Lectures

GL8	BIOEN-460: Neural Engineering, undergrad, <i>UW</i>	F'21
GL7	DS-1 (CS-90DA): Data Science Foundations, undergrad, <i>UCSB</i>	F'20
GL4	NRSC-490: Advanced Topics in Neuroscience, undergrad, <i>U Puget Sound</i>	S'18
GL1	PSYCH-268A: Computational Neuroscience, undergrad, <i>UCI</i>	F'15

### Graduate Teaching Assistant

TA3	CS-143A: Principles of Operating Systems, 186 students, undergrad, <i>UCI</i>	S'15
TA2	CS-171: Introduction to Artificial Intelligence, 81 students, undergrad, <i>UCI</i>	W'15
TA1	Networks & Circuits I & II, undergrad, <i>ETH Zurich, Switzerland</i>	F'09, S'10

### Teaching Publications

TP5	M Gevorgyan, A Mamikonyan, <b>M Beyeler</b> (2020). <i>OpenCV4 with Python Blueprints, Second Edition. Packt Publishing Ltd., Birmingham, UK, 366 pages, ISBN 978-178980181-1.</i>	
TP4	A Sharma, VR Shrimali, <b>M Beyeler</b> (2019). <i>Machine Learning for OpenCV 4, Second Edition. Packt Publishing Ltd., Birmingham, UK, 420 pages, ISBN 978-178953630-0.</i>	
TP3	<b>M Beyeler</b> (2017). <i>Machine Learning for OpenCV. Packt Publishing Ltd., Birmingham, UK, 382 pages, ISBN 978-178398028-4. Also available in Korean, Japanese, and as a video course. [Code]</i>	
TP2	J Howse, P Joshi, <b>M Beyeler</b> (2016). <i>OpenCV: Computer Vision Projects with Python. Packt Publishing Ltd., Birmingham, UK, 558 pages, ISBN 978-178712549-0.</i>	
TP1	<b>M Beyeler</b> (2015). <i>OpenCV with Python Blueprints. Packt Publishing Ltd., Birmingham, UK, 230 pages, ISBN 978-178528269-0. [Code]</i>	



## SCIENCE COMMUNICATION & PUBLIC OUTREACH

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### Public Lectures

PL2 UCSB Groundbreaking Research/Innovative Technology (GRIT), <i>UCSB</i>	2022
PL1 UCSB Open House (formerly 'Spring Insight'), virtual lecture, <i>UCSB</i>	2020

### Media Coverage

MC8 Greedy optimization of electrode arrangement for epiretinal prostheses, <i>MICCAI Daily Magazine</i>	2022
MC7 A neural autoencoder to enhance sensory neuroprostheses, <i>TechXplore</i>	2022
MC6 Are we witnessing the dawn of post-theory science?, <i>The Guardian</i>	2022
MC5 Will it be possible to upload information to my brain?, <i>Gizmodo Asks</i>	2021
MC4 Building the bionic eye... with car tech?, <i>PCMag</i>	2021
MC3 Interview with Dr. Beyeler, <i>SciSection Media Group, Ontario, Canada</i>	2020
MC2 Reverse engineering the brain: "fooling" the mind to see, <i>Convergence Magazine, UCSB</i>	2020
MC1 Restoring vision with bionic eyes: no longer science fiction, <i>PCMag</i>	2019

### Panels

PS2 Demystifying the K99/R00 application at the National Eye Institute (NEI)	2021
PS1 An Evening with Neuroscience, <i>UW</i>	2019

### Documentary & Video Appearances

VA2 I AM AI, GTC 2021, <i>NVIDIA, Santa Clara, CA</i>	2021
VA1 Made with Android, <i>Google Developers, Mountain View, CA</i>	2015

### Community Involvement & Public Outreach

CI7 Competition judge: Global Undergraduate Awards, <i>Dublin, Ireland</i>	2021 – present
CI6 Competition judge: SBHacks Hackathon, <i>UCSB</i>	2020 – 2021
CI5 Competition judge: US Congressional App Challenge, <i>Washington, DC</i>	2019 – 2020
CI4 Outreach & fundraising: Lighthouse Foundation for the Blind, <i>Seattle, WA</i>	2018
CI3 Neuronline community leader, <i>Society for Neuroscience (SfN)</i>	2016 – 2017
CI2 Student volunteer, <i>IEEE Robotics &amp; Automation Society (RAS)</i>	2014 – 2016
CI1 Lab tour leader: Mathobotix "Bytes and Bots" K-12 Summer Camp, <i>UCI</i>	2013, 2014

## PROFESSIONAL ASSOCIATIONS

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· Member: <i>IEEE Engineering in Medicine &amp; Biology Society (EMBS)</i>	2019 – present
· Member: <i>Association for Computing Machinery (ACM)</i>	2019 – present
· Member: <i>Organization for Computational Neurosciences (OCNS)</i>	2018 – present
· Member: <i>Association for Research in Vision &amp; Ophthalmology (ARVO)</i>	2018 – present
· Member: <i>Vision Sciences Society (VSS)</i>	2017 – present
· Member: <i>Society for Neuroscience (SfN)</i>	2013 – present
- Neuronline Community Leader, 2016 – 2017	

## REJECTIONS & FAILURES

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An attempt to normalize 'failure' in academia. Inspired by: Melanie Stefan (2010), A CV of Failures. *Nature* 468(467).  
 Legend: TT tenure track, PD postdoc, PhD grad

### Academic Positions

*Success rate, TT: 3 % (n=31), PD: 100 % (n=2), PhD: 50 % (n=2)*

- Tenure-track positions (R1): 17 no answers, 12 explicit rejections, 1 rejection after interview 2019
- Rockefeller University, Postdoctoral Position: accepted, offer declined 2016
- EPFL Neuroscience Graduate program: rejected 2013

### Professional

*Success rate, TT: 25 % (n=4)*

- MICCAI area chair: not selected 2021
- Next Generation Leaders Council at the Allen Institute for Brain Science: not selected 2020
- OCNS program committee: invited to apply 2019

### Extramural Grants & Major Awards

*Success rate, TT: 50 % (n=10), PD: 50 % (n=2)*

- Office of Naval Research (ONR) Special Notice: invited for full proposal, role: co-PI 2021
- SONY Focused Research Award: not awarded, role: co-PI 2021
- Chan Zuckerberg Institute (CZI) Essential Open Source Software: not awarded, role: PI 2020
- National Science Foundation (NSF) NeuroNex: invited for full proposal, role: co-PI 2020
- ADSA seed grant: finalist, role: co-PI 2019
- Burroughs Wellcome Award at the Scientific Interface (CASI): invited for full proposal, role: PI 2018

### Fellowships & Travel Awards

*Success rate, TT: 25 % (n=4), PD: 100 % (n=4), PhD: 44 % (n=9)*

- Sloan Research Fellowship: not awarded 2023
- Microsoft Research Faculty Fellowship: not awarded 2021
- IJCNN Travel Award: not awarded 2015
- NVIDIA Graduate Fellowship: not awarded 2013 – 2015
- Microsoft Research Fellowship: not awarded 2013

### Workshops

*Success rate, TT: 50 % (n=2), PD: 50 % (n=2)*

- NeurIPS workshop proposal: rejected 2021
- VSS workshop proposal: rejected 2019

### Scientific Peer Review

- C12, *Augmented Humans (AHs)*: rejected from a top-tier ACM conference 2022
- W2, *MICCAI-W*: rejected from main conference 2021
- J8, *Sci Rep*: desk-rejected from 5 high-impact neuroscience journals 2018
- J7, *Front Neurosci*: desk-rejected from 1 high-impact neuroscience journal 2018
- J6, *PLOS Comp Bio*: desk-rejected from 3 high-impact neuroscience journals 2017
- COSYNE abstract: rejected 2015, 2018