Justin M. Kasowski
(805) 636 – 8099
justin_kasowski@ucsb.edu

Education:

University of California: Santa Barbara (2016 - Present)

- **PhD** (Advancement Spring 2021, Graduation September 2023), Dynamical Neuroscience
- **Bachelor of Science** (2018), Cell and Developmental Biology

Publications:

Justin Kasowski, Gislin Dagnelie, and Michael Beyeler. (2023). **"Further Enhancements in Smart Rasterization Improves Performance Under Simulated Prosthetic Vision"**. Expected submission October 2023.

Justin Kasowski, Michael Beyeler. (2023). **"SimpleXR - An open-source Unity toolbox for simplifying behavioral research".**

Justin Kasowski and Michael Beyeler. (2023). **"Electrode Rasterization in Virtual Reality: Simulated Prosthetic Vision and Task Performance".** Journal of Neural Engineering 2023, pre-submission review

Kasowski, J., Johnson, B. A., Neydavood, R., Akkaraju, A., & Beyeler, M. (2023). "**A systematic review of extended reality (XR) for understanding and augmenting vision loss".** Journal of Vision, Special Edition on Mixed Reality, 23(5):5, 1–24, https://doi.org/10.1167/jov.23.5.5.

Justin Kasowski, Hamsi Radhakrishnan, Archita Tharanipathy, Daniela Cossio, Craig Stark, Elizabeth Chrastil. **"White matter integrity of the human limbic system corresponds to spatial navigation performance".** In revision, submission 2023.

Justin Kasowski and Michael Beyeler. **"Immersive Virtual Reality Simulations of Bionic Vision".** Augmented Humans, 2022. ACM, Kashiwa, Chiba Japan, 82-93. https://doi.org/10.1145/3519391.3522752

Justin Kasowski, Nathan Wu, and Michael Beyeler. **"Towards Immersive Virtual Reality Simulations of Bionic Vision".** Augmented Humans Conference 2021 (AHs'21). Association for Computing Machinery, New York, NY, USA, 313–315. https://doi.org/10.1145/3458709.3459003

Presentations:

Justin Kasowski, Michael Beyeler. "**SimpleXR - An open-source Unity toolbox for simplifying vision research using augmented and virtual reality".** Platform presentation, Vision Science Society, 2023.

Justin Kasowski, Michael Beyeler. **"Augmented Reality Simulation of Bionic Vision".** Demo Night, VSS 2023.

Justin Kasowski, **"Immersive Virtual Reality Simulations of Bionic Vision".** Platform presentation, Eye and the Chip, 2021.

Justin Kasowski, Elizabeth Chrastil. **"Assessment of Individual Differences in Navigation by Diffusion MRI Connectometry."** Poster, Society for Neuroscience Annual Meeting, 2019.

Chrastil, E.R., Nicora, G.L., Davis, R., & Kasowski, J. **"The influence of decision-making on spatial learning and memory: An individual differences approach."** Poster, Society for Neuroscience Annual Meeting, 2017.

Anvitha Akkaraju, Justin Kasowski, Michael Beyeler. **"Evidence for a hybrid model in moving target interception".** Poster, VSS, 2023

Apurv Varshney, Mitch Munns, Justin Kasowski, Mantong Zhou, Chuanxiuyue He, Scott Grafton, Barry Giesbrecht, Mary Hegarty, Michael Beyeler. **"Visual Navigation Under High-Stress Conditions".** Poster, VSS, 2023

Pedagogy/Mentorship:

University of California: Associate Professor (Summer 2021) -

- Instructor of record, CS24 - Problem Solving with Computers II (Data structures, complexity analysis, OOP practices)

University of California: Certificate in College and Undergraduate Teaching (Completion Spring 2023)

- Completed teaching evaluations, student feedback analysis, courses on teaching, and creation of a pedagogy portfolio

UCSB - Mentoring Unity for Virtual Reality Research (MUVVR), Cofounder and President (February 2022 - Present)

- Provided guidance and technical support to graduates and undergraduates developing XR software or setting up hardware
- Created an interdisciplinary network of subject matter experts spanning the fields of Computer Science, Media Arts, Psychology, and Electrical and Computer Engineering

Mentor Collective - University of California (Ambassador Nov 2022 - Present, Mentor July 2022 - Present)

- Mentored incoming transfer students, a group largely overlooked by the academic system.

UCSB - Research Mentorship Program (Summer 2020, Summer 2021) -

- Mentored four California high school students through individual projects focused on simulated prosthetic vision in XR.

University of California: Teaching Assistant (Spring 2020- Spring 2022) -

- PSY221F - Computational Neuroscience (Spring '22)
- CS181 - Computer Vision (Winter '21)
- CS24 - Problem Solving with Computers II (Spring '21)
- GEOG112 - Environmental Hydrology (Spring '20)

Grants/Fellowships:

- Vision Science Society, 2023 - NEI Travel Grant
- UCSB Dynamical Neuroscience Summer Fellowship (Summer - 2020)
- UCSB Dynamical Neuroscience Fellowship (Winter - 2020)
- UCSB Regents in Dynamical Neuroscience Fellowship (2018 / 2019)

Research:

UCSB Bionic Vision Lab - Dr. Michael Beyeler (2019 - Present)

Research Focus: Virtual reality simulations to identify possible improvements in visual prostheses

- Completed multiple human subjects experiments from study creation through data analysis and write-up.
- Developed simpleXR, a Unity package to streamline research with extended reality (https://github.com/unity-sXR/sXR)
- Team lead for developing VR/AR augmentations and training under high-stress conditions (September '21-November '22)
- Developed a GPU-optimized XR simulation of bionic vision through the integration of HTC Vive eye tracking, Unity (C#), HLSL (graphics shaders), and the Python-based software package "pulse-2-percept".
- Deployed, optimized, and performed troubleshooting for the HTC Vive Pro-eye, Quest 2, and Samsung Odyssey HMDs

UCSB Spatial Neuroscience Lab - Dr. Elizabeth Chrastil (2017 - 2019)

Research Focus: Virtual reality environments for studying human navigation in fMRI

- Completed MRI safety training and completed scanning more than 40 participants in a virtual reality MRI task.
- Analyzed a dataset of over 100 diffusion spectrum imaging collections
- Developed custom 3D models using Adobe Fuse, Google Sketchup and Autodesk Inventor
- Developed software to study human navigation by utilizing the game engines "Vizard", "Unreal", and "Unity"
- Developed novel software for the Oculus Rift CV1, Oculus Rift DK2, Samsung Odyssey, and Oculus Quest (Android)

Leadership:

US Navy Pipelines Graduate Student Team Lead (Summer 2021, continued support summer 2022)

Honorable Mentions: Best Technical Innovation (2022), Best Presentation (2021)

- Led novice teams in the development of XR/AR training protocols for the Microsoft Hololens
- Provided technical guidance as the mixed reality subject matter expert
- Developed innovative solutions for 3D-scanning and the implementation of 3D models
- Utilized lightmaps and light-emitting objects in XR

UCSB Collaboration for Neuroscience: Founder and President (2016 - 2018), Graduate Student Liason (2018 - 2020)

- Registered a new campus organization geared towards "connecting motivated neuroscience students to research and volunteer opportunities in the area"
- Managed a team of 4 other officers to plan events, allocate funding, and participate in community outreach

UCSB Student Leadership Retreat (Summer 2016 and 2017)

- Attended workshops focused on improving leadership skills including communication, teamwork, adaptability, and the capacity to delegate tasks to the most suitable team members
- Learned ways to effectively communicate ideas thoroughly while still using efficient communication skills

SBCC NeuroClub: Member (2014) and President (2015-2016)

- Managed club finances, held events, and worked with SBCC faculty to coordinate bi-weekly meetings on campus

Diversity Equity and Inclusion:

AccessGrads Mentor (July '22-Present)

- Mentored 2 students from underrepresented groups in STEM. Provided guidance in the process of preparing for, and applying to graduate school, along with monitoring how the student is doing emotionally, academically, and financially..

'Digitize' - High School Outreach (Summer 2020)

- Hosted an object-oriented programming lecture for high school students in advanced placement programming. The goal of digitize is providing test prep to students without the financial means to pay for it. Volunteer lecturers planned a lecture around a specific topic that would appear on the AP exam.

Graduate Biology Mentorship Association: Underrepresented Students and Navigating Research (Speaker, May 2022)

- Panel speaker for GBMA's "Navigating Research Opportunities at UCSB" student-led panel. The goal of the panel was introducing undergraduate students, particularly those who are first generation or underrepresented, to research opportunities and resources on campus. Provided first hand experiences of overcoming the socioeconomic hurtle and advice to those students who may not have the best grades or extracurricular experience.