

Aviv Elor
aelor@ucsc.edu | avivelor1@gmail.com | +1 (925) 787-7539
www.avivelor.com



[EDUCATION]

Ph.D. in Computational Media
University of California, Santa Cruz
Advisor: [Sri Kurniawan](#)

2019-2021
4.00/4.00 GPA

B.S. in Robotics Engineering, *Highest Honors in the Major*
University of California, Santa Cruz
Minor in Electrical Engineering
Advisor: [Mircea Teodorescu](#)

2015-2019
3.82/4.00 GPA

[RESEARCH AREAS]

Human-Computer Interaction, Immersive Media, Extended Reality, Robotics, Affective Computing, User Experience, Emerging Technologies, Games for Health, Serious Games, Assistive Applications, Accessibility

[PUBLICATIONS]

- [J7] Michael Powell, **Aviv Elor**, Ash Robbins, Sri Kurniawan and Mircea Teodorescu, "[Predictive Shoulder Kinematics of Rehabilitation Exercises through Immersive Virtual Reality](#)," in IEEE Access, doi: 10.1109/ACCESS.2022.3155179.
- [J6] **Aviv Elor** and Joel Ward. "[Accessibility needs of extended reality hardware: a mixed academic-industry reflection](#)." ACM Interactions 28, 3 (May - June 2021), 42–46. doi: 10.1145/3457877
- [J5] **Aviv Elor**, Michael Ora Powell, Evanjelin Mahmoodi, Mircea Teodorescu, and Sri Kurniawan. "[Gaming Beyond the Novelty-Effect of Immersive Virtual Reality for Physical Rehabilitation](#)." IEEE Transactions on Games (TOG, 2021). doi:10.1109/TG.2021.3069445
- [J4] **Aviv Elor** and Sri Kurniawan. "[The Ultimate Display for Physical Rehabilitation: A Bridging Review on Immersive Virtual Reality](#)." Frontiers in Virtual Reality (2020). doi: 10.3389/frvir.2020.585993
- [J3] **Aviv Elor**, Michael Powell, Evanjelin Mahmoodi, Nico Hawthorne, Mircea Teodorescu, and Sri Kurniawan. "[On Shooting Stars: Comparing CAVE and HMD Immersive Virtual Reality Exergaming for Adults with Mixed Ability](#)." ACM Transactions on Computing for Healthcare 1, no. 4 (2020): 22. doi: 10.1145/3396249
- [J2] Michael Powell, **Aviv Elor**, Mircea Teodorescu, and Sri Kurniawan. "[OpenButterfly: Multimodal rehabilitation analysis of immersive virtual reality for physical therapy](#)." American Journal of Sports Science and Medicine 8, no. 1 (2020): 23-35. doi: 10.12691/ajssm-8-1-5
- [J1] **Aviv Elor**, Mircea Teodorescu, and Sri Kurniawan. "[Project star catcher: A novel immersive virtual reality experience for upper limb rehabilitation](#)." ACM Transactions on Accessible Computing (TACCESS) 11, no. 4 (2018): 1-25. doi: 10.1145/3265755
- [C11] **Aviv Elor**, Tiffany Thang, Benjamin Paul Hughes, Alison Crosby, Amy Phung, Everardo Gonzalez, Kakani Katija, ..., and Leila Takayama. "[Catching Jellies in Immersive Virtual Reality: A Comparative Teleoperation Study of ROVs in Underwater Capture Tasks](#)." In Proceedings of the 27th ACM Symposium on Virtual Reality Software and Technology, pp. 1-10. 2021. <Best Paper Award 🏆, 24% Acceptance Rate>
- [C10] Maxim Kuznetsov*, **Aviv Elor**, Sri Kurniawan, Colleen Bosworth, Yohei Rosen, Nicholas Heyer, Mircea Teodorescu, Benedict Paten, and David Haussler. "[The Immersive Graph Genome Explorer: Navigating Genomics in Immersive Virtual Reality](#)." In 2021 IEEE 9th International Conference on Serious Games and Applications for Health (SeGAH), pp. 1-8. IEEE, 2021.
- [C9] April Sun*, Samantha Conde, and **Aviv Elor**. "[Increasing Sociability in a Virtual World: A Serious Game for Social Anxiety Disorder](#)." In 2021 IEEE 9th International Conference on Serious Games and Applications for Health (SeGAH), pp. 1-5. IEEE, 2021.
- [C8] **Aviv Elor**, Asiih Song, and Sri Kurniawan. "[Understanding Emotional Expression with Haptic Feedback Vest Patterns and Immersive Virtual Reality](#)." In 2021 IEEE Conference on Virtual Reality and 3D User Interfaces (VR). IEEE, 2021. doi:10.1109/VRW52623.2021.00041

- [C7] **Aviv Elor** and Sri Kurniawan. "[Deep Reinforcement Learning in Immersive Virtual Reality Exergame for Agent Movement Guidance.](#)" In 2020 IEEE 8th International Conference on Serious Games and Applications for Health (SeGAH), pp. 1-7. IEEE, 2020. doi: 10.1109/SeGAH49190.2020.9201901
- [C6] Samantha Conde, **Aviv Elor**, and Sri Kurniawan. "[Boundaries: A Serious Game on Relationships for Individuals with Developmental Disabilities.](#)" In 2020 IEEE 8th International Conference on Serious Games and Applications for Health (SeGAH), pp. 1-7. IEEE, 2020. doi: 10.1109/SeGAH49190.2020.9201810
- [C5] Tiffany-Ellen Vo, Rohan Jhangiani, Ash Robbins, and **Aviv Elor**. "[Designing User-Specific Soft Robotic Wearable Muscular Interfaces with Iterative Simulation.](#)" In 2020 IEEE International Conference on Smart Computing (SMARTCOMP), pp. 253-255. IEEE, 2020. doi: 10.1109/SMARTCOMP50058.2020.00056
- [C4] **Aviv Elor** and Samantha Conde. "[Exploring the Creative Possibilities of Infinite Photogrammetry through Spatial Computing and Extended Reality with Wave Function Collapse.](#)" In 2020 11th International Conference on Computational Creativity (ICCC), Casual Creators Workshop, 2020.
- [C3] **Aviv Elor** and Asiah Song. "[iSAM: Personalizing an Artificial Intelligence Model for Emotion with Pleasure-Arousal-Dominance in Immersive Virtual Reality.](#)" In 2020 15th IEEE International Conference on Automatic Face and Gesture Recognition (FG 2020)(FG), pp. 583-587. doi: 10.1109/FG47880.2020.00091
- [C2] **Aviv Elor**, Steven Lessard, Mircea Teodorescu, and Sri Kurniawan. "[Project Butterfly: Synergizing Immersive Virtual Reality with Actuated Soft Exosuit for Upper-Extremity Rehabilitation.](#)" In 2019 IEEE Conference on Virtual Reality and 3D User Interfaces (VR), pp. 1448-1456. IEEE, 2019. doi: 10.1109/VR.2019.8798014
- [C1] **Aviv Elor**, Sri Kurniawan, and Mircea Teodorescu. "[Towards an immersive virtual reality game for smarter post-stroke rehabilitation.](#)" In 2018 IEEE International Conference on Smart Computing (SMARTCOMP), pp. 219-225. IEEE, 2018. doi: 10.1109/SMARTCOMP.2018.00094

[INVITED PRESENTATIONS AND TALKS]

- 2021 [UCSC Genomics Institute](#), Genomics Science Series, "Enter the Split Reality Lab: Beyond Simultaneous Longitudinal Biomedical Imaging through Immersive Virtual Reality."
- 2021 Japan [National Institute of Advanced Industrial Science and Technology \(AIST\)](#), Artificial Intelligence Seminar - "AI-enhanced Virtual Reality for Physical Therapy"
- 2020 [Mexican International Conference on Computer Science](#) – Gamified iVR for Medical Informatics
- 2019 [SEMICON WEST](#) – On Immersive Experiences, Robotics, and Biofeedback for Rehabilitation
- 2019 [Walt Disney Imagineering](#) – Virtual Attractions Showcase
- 2018 [ImmersED Summer Fellowship](#) - Mindfulness with Virtual Reality
- 2018 [UCSC Universal Access Guest Lecturer](#) - User Centered Design in Serious VR Games
- 2018 [The VR Podcast - Honorary Guest](#); Podcast Speaker
- 2018 [UCSC IEEE Chapter](#) – On Virtual Reality for Physical Therapy
- 2017 [UCSC CITRIS Showcase](#) - Games for Health and Rehabilitation with Project Star Catcher

[SELECTED MEDIA COVERAGE]

- 2020 Crash Test World – [Kari Byron on VR for Physical Therapy with Project Butterfly](#)
- 2020 Barry Goldwater Foundation - [Goldwater Feature Profiles - Aviv Elor](#)
- 2019 CITRIS, UC - [Using Virtual Reality for Physical Rehabilitation](#)
- 2019 Youtube: Aviv Elor - [CAVE Cowboy Kitten & Star Catcher](#)
- 2018 Jack Baskin School of Engineering, UCSC - [Aviv Elor: Computer Engineering Student](#)
- 2017 UC Santa Cruz - [Engineering undergraduate wins prestigious Goldwater Scholarship](#)
- 2017 Youtube: Aviv Elor – [Autonomous Star Wars Robot Competition](#)
- 2017 Youtube: Aviv Elor – [Virtual Reality for Therapy](#)
- 2017 Santa Cruz Sentinel - [HACK UCSC 2017: Traffic Solution](#)

[MENTORING AND STUDENT ADVISING]

*denotes student who contributed to a publication listed above.

Undergraduate Students

- 2021-2022, [Adrian Parrales](#), Independent Study and Research Project
- 2020-2021, [Julia Ni](#), Independent Study and Research Project

- 2020-2021, [Rohit Kulkarni](#), Independent Study and Research Project
- 2020-2021, [Sairaghav Tummala](#), Independent Study and Research Project
- 2019-2021, [Maxim Kuznetsov*](#), Independent Study and Research Project
- 2019-2021, [Rohan Jhangiani*](#), Independent Study and Research Project
- 2019-2021, [Stryker Buffington](#), Independent Study and Research Project
- 2019-2020, [Tiffany Ellen-Vo*](#), Independent Study and Research Project
- 2019-2020, [Colby Leikse](#), Independent Study and Research Project
- 2018-2020, [Evanjelin Mahmoodi*](#), Independent Study and Research Project
- 2018-2019, [Nico Hawthorne*](#), Independent Study and Research Project
- 2018-2019, [Samantha Conde*](#), Independent Study and Research Project

High School Students

- 2020, [April Sun](#), UCSC Science Internship Program (SIP) Project
- 2020, [Maria Cheriyar](#), UCSC Science Internship Program (SIP) Project
- 2020, [Aiden Deffner](#), UCSC Science Internship Program (SIP) Project

[HONORS, AWARDS, AND FELLOWSHIPS]

^denotes significant contribution as unlisted collaborator due to student restriction PI status

Grants

- **Aviv Elor**. "[SBIR Phase I: An immersive virtual reality platform for remote physical therapy and monitoring.](#)" National Science Foundation (NSF), \$256,000 USD, Awarded September 2021.
- **Aviv Elor**[^] and Sri Kurniawan. "[I-Corps: An immersive virtual reality platform for remote physical therapy and monitoring.](#)" National Science Foundation (NSF), \$50,000 USD, Awarded July 2020.
- Nancy Chen, Sri Kurniawan, and **Aviv Elor**[^]. "[Interactive Virtual Platform for Intergenerational Wellbeing of Essential Worker Communities in a Medical Desert: Promoting Health Equity During and After Pandemic.](#)" CITRIS Seed Fund, \$40,000 USD, Awarded June 2020
- **Aviv Elor**[^], Mircea Teodorescu, and Sri Kurniawan. "[Open-source 3D Browser with and without Virtual Reality for Gamified Crowdsourcing of COVID-19 Data Analysis.](#)" CITRIS Seed Fund, \$50,000 USD, Awarded May 2020
- Evanjelin Mahmoodi* and **Aviv Elor**. "Project Pasithea: Towards an Accessible Immersive Virtual Reality Experience for Coping with Anxiety and Obsessive-Compulsive Disorder." CITRIS Tech For Social Good Fund, \$5,000 USD, Awarded December 2019.

Fellowships and Awards

- [ARCS Foundation Fellowship](#), \$10,000 USD, Awarded 2020
- [UC Global and Community Health Wellbeing Fellowship Program](#), \$1,500 USD, Awarded 2020
- [Scientific Laboratory Automation Society Tony B. Award](#), \$2,000 USD, Awarded 2020
- [Eugene V. Cota-Robles Doctoral Student Fellowship](#), \$120,000 USD, Awarded 2019
- [Huffman Prize & UCSC Undergraduate Degree with Highest Honors](#), \$500 USD, Awarded 2019
- [National Institutes of Health \(NIH\) Undergraduate Scholar](#), \$20,000 USD, Awarded 2018
- [Barry Goldwater Scholar](#), \$7,500 USD, Awarded 2017
- [UCSC Chancellor's Award for Outstanding Undergraduate Research](#), \$600 USD, Awarded 2017

[ACADEMIC ACTIVITIES]

- Chair (2021-present), Vice Chair (2019-2021), Games for Health Journal Early Career Committee, 2019-Present
- Vice Chair, XR Access Hardware Device Accessibility Working Group, 2019-2020
- National Member, Sigma Xi: Research Honors Society, 2018
- National Member & Industry (Google) Liason, IEEE UCSC Chapter, 2017
- National Member & Industry (Google) Liason, Tau Beta Pi: Engineering Honors Society, 2017
- National Member, Society of Women Engineers, 2016
- Student Peer Mentor & Member, Multicultural Engineering Program (MEP), 2015-present
- Student Athlete, UCSC Judo Club, 2015-2016

[ACADEMIC SERVICE]

- *Organizer:*
 - XR Access 2020 Symposium, *Hardware Device Accessibility Workshop Organizer*, 2020
- *Reviewer:*
 - ACM CHI Conference on Human Factors in Computing Systems (CHI, 2022)
 - ACM Symposium on Virtual Reality Software and Technology (VRST, 2021)
 - Taylor & Francis Disability and Rehabilitation Technology: Assistive Technology (2021)
 - Frontiers in Human Neuroscience (2021),
 - Frontiers in Neuroergonomics (2021),
 - SAGE Journal of Rehabilitation and Assistive Technology Engineering (JRATE, 2020),
 - ACM Conference on Designing Interaction Systems (DIS, 2020),
 - International Journal of Human-Computer Studies (IJHCS, 2019).
- *Student Volunteer:*
 - ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW), 2020

[INDUSTRY EXPERIENCE]

Immergo Labs, Santa Cruz, CA (Sep 2021 – present)

Co-Founder and Principal Investigator

- As principal investigator, my responsibilities are centered on driving Immergo's research vision, immersive environment development, user experience, and human-computer interaction techniques.
- As Co-Founder, I drove the iterative development of Immergo's business model, 200 customer discovery interviews, and MVP design-- resulting in preseed funding of \$306,000.00 for further discovery and R&D.
- I currently serve as the principal investigator for our NSF Phase I SBIR Award (https://nsf.gov/awardsearch/showAward?AWD_ID=2111847)

Facebook Reality Labs, Oculus VR Hardware UXR Team, Remote, CA (June 2021 – Sep 2021)

User Experience Research Intern

- Mixed methods researcher in the Facebook Reality Labs (FRL) VR Hardware UXR & Hardware Pathfinding Teams. Applied human-centered research towards mapping use-cases and input needs with Oculus VR products between multiple cross-functional teams (XFNs).
- Performed remote research between 70 participants over one month utilizing a mixture of the following methods in virtual reality: surveys, usability testing, think-aloud, semi-structured interviews, focus groups, workshops, and card sorting.
- Rapidly disseminated research within one week of study completion, resulting in updated product strategies between 5 different XFN teams (VR hardware, core software, accessories, avatars, and marketing).
- Iteratively designed and influenced three research protocols including independent (1) creation of a custom Unity Game Engine world for conducting focus groups in VR with moderation tools, (2) development qualitative analysis pipeline for thematic analysis and expedited topic discovery using MATLAB Natural Language Processing, (3) application of a quantitative analysis pipeline using multivariate significance analysis in SPSS via ANOVA & ANCOVA depending on parametric results of data.

National Science Foundation, I-CORPS, Los Angeles, CA (May 2020 – Aug 2020)

Entrepreneurial Lead

- Participated in the NSF I-Corps, a program centered around learning from and understanding the needs of potential users to better translate academic research into a system for public use.
- Interviewed 130+ people in the physical therapy industry during the seven-week program to understand needs of telehealth and feasibility of academic research translation for immersive virtual reality physical therapy.
- Trained in the startup business model lean launchpad method by Steve Blank.

National Institutes of Health, NCATS, Bethesda, MD (June 2019 – Sep 2019)

UGSP Advanced Mixed Reality Researcher

- Developed an immersive mixed reality platform for interactive biomedical data analysis with Magic Leap One and WebGL that enabled runtime annotation and dynamic visualization.
- Implemented an automated pipeline for reconstructing nuclear image stacks into dynamic 3D game objects for manipulation and collaborative viewing of voxelized tissue and cell nuclei.

Walt Disney Imagineering, Glendale, CA (Jan 2019 – May 2019)

Virtual Interactions Engineering Intern

- Developed product features for virtual environments including theme-park visualizations, animatronics, ride vehicles, simulated projectors, and other dynamic show elements in Unreal Engine 4.
- Assisted Art and Digital Media Production Pipeline through building POC's, troubleshooting active products, and managing cloud solutions for asset handling.
- Converted Virtual Reality asset visualizer collaborative software from Unity3D to Unreal Engine 4.

Warner Bros, Burbank, CA (June 2018 – Sep 2018)

Emerging Technology Engineering Intern

- Explored eye tracking and biometric closed loop project for emotion-based entertainment.
- Developed & deployed Augmented Reality App for Wonder Woman & Joker movie pre-production.
- Implemented machine learning to train AI agents to synthesize voices.

Google (via VACO), Santa Cruz, CA (Sep 2017 – July 2018)

Google Daydream Student Innovator

- Ran 7+ events for Google Daydream and showcased exhibits at 3+ international conferences.
- Built Google Expeditions VR tour as well as Daydream showcase and demo experiences.
- Mentored students and assisted Google Daydream Developers on 10+ VR Apps.

University of California, Santa Cruz, CA (Sep 2016 – Sep 2021)

Researcher for ASSIST and MT/DANSER Labs

- Planned, organized, and conducted independent and collaborative research.
- Conducted extensive user testing with qualitative and quantitative evaluation.
- Published results and findings of investigative results in professional journals.

Topics consist of Virtual/Augmented Reality, Autonomous Systems, User-Interface Design, Simultaneous Localization and Mapping (SLAM6D), and Bio-Inspired Exoskeletons.

Valent Power, Scotts Valley, CA (Jun 2016 - Sep 2016)

Electrical Engineering Summer Intern

- Assembling and testing car charging modules and robotic optical disk equipment.
- Reviewing, analyzing, and editing schematics.
- Designing and documenting equipment and assembly procedures.