Brandon Biggs

- Github Profile
- Google Scholar
- Personal Website
- Linkedin

EDUCATION:

- PhD in Human Centered Computing from Georgia Institute of Technology, Atlanta GA - 2026 (In progress)
- MDes in Inclusive Design from OCAD University, Toronto ON - 2019 (Designing Accessible Maps)
- BA in music (Minor in Marketing) from CSU East Bay, Hayward CA - 2016 (3.830 GPA with honors institute)
- AA Honors degree in General Music from Foothill College, Los Altos CA - 2012

PUBLICATIONS:

- Abstract: Biggs, B. & Walker, B. N. (2026). AUDIOM Indoor. Accessibility Challenge submission in Proceedings of the 23rd International Web for All Conference (W4A 2026), Dubai, United Arab Emirates (29-30 June). pp. 140-141. DOI: https://doi.org/10.1145/3800424.3800435
- Paper: Biggs, B., Sloan, D., Oppegaard, B., Giudice, N. A., Coughlan, J. M., and Walker, B. N. (2026). Systematically Evaluating Equivalent Purpose for Digital Maps. Journal on Technology and Persons with Disabilities, 14.
- Paper: Biggs, B., Murgaski, S., Coppin, P., and Walker, N. B. (2025). Creating Non-Visual Non-Verbal Social Interactions in Virtual Reality. In Virtual Worlds (Vol. 4, No. 2, p. 25). MDPI.
- Paper: Biggs, B., Coughlan, J., & Walker, B. N. (2025). Systematically Evaluating Digital Map Tools Based on the WCAG. Journal on Technology and Persons with Disabilities, 13.
- Paper: Walmer, A., Cash, N., Yin, W., Majors, T., Biggs, B., & Walker, B. N. ACCESSIBLE SONIFICATION OF TOTAL SOLAR ECLIPSE 2024: ACCESSIBLE MAP AND MULTIMODAL VIRTUAL REALITY EXPERIENCE. Published in the International Conference on Auditory Display, 2024.
- Paper: Biggs, B., Agbaroji, H., Toth, C., Stockman, T., Coughlan, J., & Walker, B. (2024). Co-designing auditory navigation solutions for traveling as a blind individual during the COVID-19 pandemic. Vol. 14, no. 1. Journal of Blindness Innovation and Research. PMC11034939.
- Paper: Biggs, B., Toth, C., Stockman, T., Coughlan, J., & Walker, B. (2022). Evaluation of a Non-Visual Auditory Choropleth and Travel Map Viewer. Published in the International Conference on Auditory Display, 2022. PMCID: PMC10010675.
- Abstract: Biggs, B., Toth, C., Stockman, T., Tupy, S., Coughlan, J., & Walker, B. (2022). Audiom: An auditory web-based geographic map viewer showing

COVID-19 state data and a travel map. Published in the International Conference on Auditory Display, 2022.

- Paper: Coughlan, J., Biggs, B., & Shen, H. (2022). Non-Visual Access to an Interactive 3D Map. In Joint International Conference on Digital Inclusion, Assistive Technology & Accessibility (ICCHP-AAATE '22). PMCID: PMC9467469.
- Paper: Biggs, B., Pitcher-Cooper, C., & Coughlan, J. (2022). Getting in Touch With Tactile Map Automated Production: Evaluating impact and areas for improvement. *Journal on Technology and Persons with Disabilities*, *10*.
- Chapter: Biggs, B., Siu, A. F., Aziz, N., & Stockman, T. (2022). Remote Co-Design in the Digital Age. In: Rioux M.H., Viera J., Buettgen A., Zubrow E. (eds) Handbook of Disability. Springer, Singapore.
- Abstract: Coughlan, J. M., Biggs, B., & Shen, H. (2021). Point and Listen: Bringing a 3D Map to Life with Audio-Based AR. Frameless 4.1 (2022).
- Paper: Biggs, B., Coughlan, J. M., & Coppin, P. (2021). Design and evaluation of an interactive 3D map. Rehabilitation Engineering and Assistive Technology Society of North America, 2021.
- Paper: Coughlan, J. M., Biggs, B., Rivière, M. A., & Shen, H. (2020). An Audio-Based 3D Spatial Guidance AR System for Blind Users. In International Conference on Computers Helping People with Special Needs (pp. 475-484). Springer, Cham.
- Paper: Coughlan, J., Shen, H., & Biggs, B. (2020). Towards accessible audio labeling of 3D objects. *Journal on Technology and Persons with Disabilities*, *8*.
- Paper: Biggs, B., Coughlan, J., Coppin, P. (2019). Design And Evaluation Of An Audio Game-Inspired Auditory Map Interface. Published in the International Conference on Auditory Display, 2019.
- Master's Thesis: Biggs, B. (2019). Designing Accessible Nonvisual Maps. Ontario College of Art and Design University.
- Abstract: Biggs, B., Yusum, L., Ghodke, U., & Coppin, P. (2018). The aesthetics of 2D versus 3D Tactile Representations. International Association of Empirical Aesthetics international conference 2018.
- Abstract: Biggs, B., Yusim, L., Coppin, P. (2018). The Audio Game Laboratory. Published in the International Conference of Cognitive Semiotics (IACS) 2018.
- Abstract: Biggs, B., Yusim, L., Coppin, P. (2018). The Audio Game Laboratory: Building maps from games. Published in the International Conference on Auditory Display, 2018.

PROFESSIONAL PRESENTATIONS:

- Effective Tools for Making Your STEM Content Accessible. National ADA Centers, September 2026, presenter, remote.
- How to Make Your GIS Maps Accessible and ADA Compliant. Wisconsin Land Information Association Summer Workshop, August 2026, presenter, remote.
- How To Make Your ArcGIS Maps ADA Title II Compliant with Audiom, GeoJobe Webinar, June 2026, presenter, remote.
- Hearing the Shape of The Earth: Making digital maps ADA compliant, Annual Association of State Geologists meeting, June 2026, presenter, in-person.

- From "Graphic Blank" to Fully Accessible: How the Wisconsin Geological and Natural History Survey Made the Most Complex Accessible Digital Map in History. National ADA Centers, May 2026, presenter, remote.
- Presenting Making Wisconsin Geological Survey Quaternary Map Accessible With Audiom. DMT Lite, March 2026, Q&A support, remote.
- USER CENTRIC DESIGN & FUNDING OF ACCESSIBLE TECH, South by Southwest, March 2026, panelist, in-person.
- Brandon Biggs Mentor Session, South by Southwest, March 2026, mentor, in-person.
- CSUN 2026: Making ArcGIS ESRI Maps Accessible. March 2026, Presenter, In-Person.
- CSUN 2026: Making Maps with Custom Data Using the Audiom SDK. March 2026, presenter, in-person.
- CSUN 2026: Systematically Evaluating Equivalent Purpose for Digital Maps. March 2026, presenter, in-person.
- Audiom: Evaluating if digital interactive alternate text provides the same information as visual spatial maps and diagrams (Minute 58), Science and Engineering / National Association of Blind Students STEM seminar, February 2026, presenter, remote.
- Can You Hear This Map: Research on audio and text maps, Center for Inclusive Design and Innovation, February 2026, presenter, in-person.
- Geo SonNet Town hall, AGU 2025, December 2025, panelist, remote.
- Spotlight: PitchAbility 2025 Winner: XR Navigation, Sight Tech Global, December 2025, speaker, remote.
- Seminar 2: Making Accessible Digital Maps. International Cartographic Association, December 2025, presenter, remote.
- Making Maps the ADA Way. Georgia Geospatial Association, November 2025, presenter, remote.
- Did you Hear That Wink? Non-Visual, Non-Verbal Social Interaction Patterns from the Audio Game Community. XR Access, November 2025, presenter, remote.
- “Mouse Free, Eyes Free” Map: Map Innovation with Audiom's Creator, Brandon Biggs Keynote. Geo ADI Week at Google, November 2025, Keynote presenter, remote.
- Keyboard, Contrast, and Text: Making interactive digital maps ADA compliant. Accessibility Matters Conference, October 2025, presenter, remote.
- Making GIS Data Accessible and ADA Compliant. National States Geographic Information Council, October 2025, presenter, remote.
- Disability is Ability in Innovation Keynote. Wireless Innovation Hackathon, Accessible SmartTech Lab, October 2025, Keynote Presenter, in-person.
- Creating Inclusive and ADA Compliant Digital Geographic Text Maps. International Association of Accessibility Professionals, August 2025, presenter, remote.
- The Quest for Equal Access: Innovating Blind-Centered Maps and Diagrams. National Federation of the Blind Convention mainstage, July 2025, in-person.

- Virtual ADA Symposium 2025, 7A) Making Digital Geographic Maps ADA Compliant & Inclusive. May 2025, remote.
- Open the paths Conference: Designing Inclusive Travel Tools. March 2025, remote.
- Can you Read this Map: Checking Maps for ADA Accessibility. Accessible Technology webinar series. ADA Centers. Presenter, remote, March 2025.
- CSUN 2025: Systematically Evaluating Digital Map Tools Based on WCAG. March 2025, in-person.
- CSUN 2025: Making building and emergency maps accessible with Audiom. March 2025, in-person.
- CSUN 2025: The New Touchscreen Experience for Audiom Web Maps is Here. March 2025 in-person.
- South By Southwest 2025 pitch competition: Pitch alternate: HealthTech, MedTech, BioTech & Accessibility. March 2025, in-person.
- Making Maps Accessible: Interview with Brandon Biggs, CareerConversations, APH Connect Center, March 2025.
- Sight Tech Global 2024: Founders and Investors: Tales and Tips from the Start-hup World. Panelist, December 2024, remote.
- Accessing Higher Ground 2024: How to Systematically Evaluate and Create Inclusive Digital Maps. October 2024, in-person.
- M-Enabling Summit 2024: New Frontiers for Inclusive Transportation Technologies. October 2024, Panelist, in-person.
- Plug & Play: XR Navigation Pitch. October 2024, Remote.
- Avant South: Pitch Competition. October 2024, In-Person.
- A11YTo: Presenting Audiom: The World's First Inclusive Digital Geographic Map Viewer and Editor. October 2024, in-person.
- Optica Summer Data Blast: Audiom: An investigation into a non-visual digital geographic map viewer and editor. August 2024, remote.
- ADA34 Celebration with ShowABILITY: ADA Title II Panel, panelist. July 2024, in-person.
- NFB National 2024: Join the Voyage for Inclusive Digital Maps. July 2024, in-person.
- CSUN, guest lecture in Seminar in Human Characteristics in Relation to Usability of Assistive Technology Devices course: Inclusive Design in Practice, April 3, 2024 remote.
- CSUN 2024: The First WCAG AAA Compliant Digital Campus Map, March 2024 in-person.
- CSUN 2024: The Future of Inclusive Digital Indoor Maps and Navigation, March 2024 in-person.
- CSUN 2024: The Digital Drawing WYSIWYG Editor for Blind Users is Here, March 2024 in-person.
- Accessing Higher Ground: Making Inclusive Digital Campus Maps, November 2023 in-person.
- Remarkable Tech Summit: XR Navigation Startup Pitch. October 2023 in-person.

- Functional Vision and Accessibility (FVA) Conference: XR through the senses: navigating the cross-sensory digital frontier. August 2023, presenter, in-person.
- American Foundation for The Blind Leadership Conference: What is the role of sighted assistance in accessible navigation? What does an inclusive Digital wayfinding experience to and Around Your Facility entail? May 2023 in-person.
- Klaus Startup Challenge: XR Navigation Pitch, March 2023, In-Person.
- VR4VIP: Non-Verbal Non-Visual Social Interactions in VR. January 2023, Presenter, remote.
- Sight Tech Global: What does non-visual access to the metaverse mean? December 2022, panelist, remote
- Affordable Degrees at Scale Symposium: Accessibility Panel, December 2022, panelist, remote
- CREATE + Taskar Center Panel: Entrepreneurship and Translation in Accessible Technologies, October 2022, Panelist, remote
- Live2Learn Inclusive Design Research Conference June 2022, panelist, Panel discussion on Inclusive Design Research: Challenging Times, Creative Solutions – Where do we go from here?
- International Conference on Auditory Display June 2022, installation/presenter: Audiom - An auditory web-based geographic map viewer showing COVID-19 state data and a travel map
- American Foundation for the Blind Leadership Conference May 2022, panelist, Wayfinding Technology at Work: Tackling Indoor Navigation Challenges
- Intuit September 2021, guest speaker, Lunch and Learn, Data Through the Ears
- OCADU September 2021, guest speaker, Art in Sound: A non-visual Gallery experience, Multisensory Museum Course
- U.S. Access Board July 2021, Audiom: The world's most inclusive map viewer, Remote
- OCADU July 2021, guest speaker, Auditory Symbols, Cognitive Semiotics Lab
- RESNA July 2021, Design and evaluation of an interactive 3D map, Remote
- CSUN Assistive Technology Conference March 2021, Inclusive COVID Map Viewer, Remote
- State of the Science, Rehabilitation Engineering Research Center on Low Vision and Blindness November 2020, (3 sessions), Challenges During COVID, Participation in High Tech (lead panelist), and Problems faced by Blind and Visually Impaired Researchers, remote
- W3C/OGC Maps for the Web September 2020, (3 presentations), introduction to Nonvisual Maps, Nonvisual Map Q&A panel, and building nonvisual maps using Audiom, remote
- Jewish High Tech Community Center June 2020, The Future of Accessibility, remote
- CSUN March 2020, (three presentations), CamIO, Audiom, and creation of an XR Navigation Experience, Anaheim CA
- FWD 50 November 2019, Meet the Innovative Design for Accessibility Winners, Ottawa ON
- California Association of Orientation and Mobility Specialists November 2019, Future of Nonvisual Mapping, Monterey CA

- International Conference on Auditory Display June 2019, Poster session, Design and Evaluation of an Audio Game Inspired Interface, Newcastle Northumberland
- International Conference of Cognitive Semiotics July 2018, The Audio Game Laboratory, Toronto ON
- International Conference on Auditory Display June 2018, The Audio Game Laboratory: Building maps from games, Houghton MI
- International Conference on Auditory Display Student Think Tank June 2018, presenter, Houghton MI

PUBLICITY

- The Map You Can Hear: Inside Audiom with Brandon Biggs, WCATea Podcast, AccessAbility Officer, November 2026.
- XR Navigation Reinvents Election Results, Assistive Technology at Easter Seals Crossroads, November 2026.
- New Election Map Puts Accessibility at the Center of Election Night, FOX43, October 2026.
- A Blind Entrepreneur Is Putting Accessibility at the Center of Election Night, Yahoo News (from FOX43), October 2026.
- Episode 293 - Brandon Biggs & XR Navigation, The Geoholics, October 2026.
- Can You Hear a Map? Brandon Biggs Is Making Maps Accessible to Everyone, Everything is Somewhere Podcast, October 2026.
- Lofgren Announces $1 Million+ Federal Grant for Groundbreaking Vision Research Based in Gilroy, Office of Congresswoman Zoe Lofgren, October 2026.
- Episode 4: Making Maps Accessible, Inclusive Pixelation, October 2026.
- See What Others Can't - Making the Airport Experience Accessible with GIS, Esri Industry Blog, September 2026.
- Introducing Audiom for Highcharts Maps, Highcharts Blog, September 2026.
- "Pressing the Up Arrow": A Big Step Forward in Accessibility, ArcNews, July 2026.
- How Brandon Biggs Of XR Navigation Is Helping To Change Our World, Authority Magazine, June 2026.
- Website accessibility remains 'slow-moving crisis' despite rule delay, experts warn, Route 50, May 2026.Social Impact Heroes:
- Maine's city and town websites are essential, new rules aim to make them accessible to all, PORTLAND (WGME), May 2026.
- Ph.D. Student Making Digital Maps That Blind People Can Hear, Georgia Institute of Technology, November 2025.
- Making Maps Accessible: Inside Audiom from XR Navigation, Double Tap Podcast, June 2025.
- Exploring the Future of Blindness Tech: Insights from Brandon Biggs and John McInerney (Part 2), Impactech Podcast, April 2025.
- Exploring the Future of Blindness Tech: Insights from Brandon Biggs and John McInerney (Part 1), Impactech Podcast, March 2025.
- Audiom: Revolutionizing Navigation for the Blind, White Canes Connect, February, 2025.

- Is AI going to replace your job? Somewhere on Earth: The Global Tech Podcast, February 2025.
- Meta rolls out some accessibility fixes to Facebook, Audiom provides accessible maps, and learning a language, Access On, January 2025.
- Finally, maps for the blind, CES 2025 Interviews with visionary leaders, January 2025.
- #075- Creating a Path to Accessible Navigation with Brandon Biggs, AdaptX podcast, December 2024.
- More Live Unboxing with Brandon Biggs from XR Navigation, October 2024.
- Brandon Biggs Teaches the Power of Self Advocacy, Bold Blind Beauty, October 2024.
- From Frustration to Innovation: Making Maps Accessible for Blind People, Bold Blind Beauty, October 2024.
- Exploring Accessibility with Brandon Biggs | Interview #5, James Warnken's channel, September 2024.
- 📢 99% Of Maps Are 'Blank' for the Blind. XR Navigation Is Changing That. Linora Tech, August 2024.
- Georgia Tech's Sonification Lab Revolutionizes Eclipse Experience for Visually Impaired. April 2024
- The Blind Life CSUN Spotlight With XR Navigation. March 2024.
- Disability Tech Talk with XR Navigation. July 2023
- Changing What's Possible: The Disability Innovation Podcast, Making Maps More Accessible with XR Navigation – Part 1, June 2023
- Changing What's Possible: The Disability Innovation Podcast, Making Maps More Accessible with XR Navigation – Part 2, June 2023
- AT BANTER PODCAST 2022, AT BANTER EPISODE 314 – BRANDON BIGGS & AUDIO NAVIGATION
- Blindabilities 2022, Audiom: Audio Maps for the Blind. Welcome back Smith-Kettlewell Eye Research Institute Engineer, Brandon Biggs and Meet Christopher Toth, Blind Applications Engineer
- Blind Bargains 2022, Audio: Inclusive Map Viewing Through Any Browser With Audiom
- KT Casebook 9th Edition, 2022. Audiom: The World's Most Inclusive Map Viewer.
- Get Art Done! 2021, Cross-Sensory Artwork with Brandon Biggs
- Blind Abilities 2021, Smith-Kettlewell Eye Research Institute is Listening to the Future of Navigation – Meet Engineer, Brandon Biggs
- Blind Bargains 2020, Expanding VR And AR Into XR With The Smith-Kettlewell | Eye Research Institute, A T Guys
- The Smith-Kettlewell Eye Research Institute, 2020. Brandon Biggs brings his ideas for accessibility to SKERI.
- Interview in WorldBound Magazine 2019, Mapping the Way, Università Cattolica Milano
- Sofia Sees Hope 2018, Brandon Biggs: A 360-degree View of One Man's LCA Journey.

AWARDS:

- New Markets, Esri Partner Conference Award, March 2026.
- First-Place, 2Gether International Gala Winners Pitch competition, December 2025.
- Audience choice, Access to Success Lab pitch competition, November 2025.
- Active Mobility Stream grant, Access to Success Lab supported by the Toyota Mobility Foundation, November 2025.
- GAADY Award from the Global Accessibility Awareness Foundation, November 2025.
- 1st-Place, Pichability pitch competition, Vista Center, November 2025.
- 1st-Place, DC Legends of Tomorrow Summer Pitch Competition, 2Gether International, July 2025.
- Audience Choice: Health Equity Accelerator Cohort Pitch Competition from 2Gether International, June 2025.
- Data Sonification Award 2025: Vision Rehabilitation and Assistive Technology Expo 2024 Exhibit Hall Map.
- Data Sonification Award 2025: Sonification of Total Solar Eclipse 2024.
- One of 10 exhibits at the Innovation For All Startup Experience at the Consumer Electronics Show January 2025
- Both 1st-place and people's choice awards, Avant South Pitch Competition, October 2024
- First-Place, Klaus Startup Challenge pitch competition, March 2023
- Young Researchers Consortium recipient 2022, International Conference on Computers Helping People
- Student Think Tank Recipient 2022, International Conference on Auditory Display
- IPaT Fellowship 2021, Georgia Institute of Technology.
- Recipient, Dr. Arthur I. Karshmer Award for Assistive Technology Research for the 2020 CSUN Assistive Technology conference
- First place, Technological/communication barriers, Innovative Designs for Accessibility 2019
- Student Think Tank Recipient 2018, International Conference on Auditory Display
- Create Data Analytics and Visualization trainee from fall 2017- Spring 2019
- Recipient, 2016 Kathryn Harvey Award National Association of Teachers of Singing, Annually awarded to the university aged winner of the Northern California NATS competition
- Recipient, 2012 NFB Scholarship, 1 of 12 selected nationally each year
- Dale M. Schoettler Scholarship for Visually Impaired Students, Recipient 2011, 2012, 2013, 2014, and 2015

GRANTS:

- Technology Transfer Grant Phase II, Audiom: Developing an Indoor Non-Visual Mapping System, September 2026, National Eye Institute from National Institutes of Health grant No. 2R42EY034411-02A1, Principal Investigator, $2,071,065.
- Small Business Research Grant Phase II, Developing and Evaluating a Visual, Auditory, and Tactile and Text Digital Thematic Map Viewer to Provide Blind and Low Vision Individuals Full Access to Thematic Maps for the First Time,

September 2025, National Eye Institute from National Institutes of Health grant No. 1 R44 EY036316-01A1, Principal Investigator, $2,020,165.
- Technology Transfer Grant Phase I, Audiom: Developing an Indoor Non-Visual Mapping System, June 2023, National Eye Institute from National Institutes of Health grant No. 1R41EY034411-01A1, Principal Investigator, $275,766.
- Audiom, September 2022, National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), Grant No. 90REGE0018, project lead, $4,625,000
- Audiom, June 2021, Impact Startup through NIDILRR, Principal Investigator, $25,000
- Audiom, September 2020, COVID Supplement, National Eye Institute of the National Institutes of Health grant no. R01EY029033, Key Personnel, $406,525
- Audiom, September 2020, National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) grant no. 90IFDV0020-01-00, Key Personnel, $695,856
- Audiom, September 2019, Diversity Supplement, National Eye Institute of the National Institutes of Health grant no. R01EY029033, Key Personnel, $105,337

PATENTS:

- Full patent (2026). US 12,747,959 B2. **Systems and Methods for Interactive Digital Maps.**
- Full patent (2024). Systems and Methods for Digital Auditory Mapping. Patent No. US 12,135,221 B2. United States Patent and Trademark Office.

RESEARCH POSITIONS:

- Sonification Lab, Georgia Institute of Technology, 2021-present, Bruce Walker
- Coughlan Lab, Smith-Kettlewell Eye Research Institute, 2019-present, James Coughlan
- Perceptual Artefacts Lab, Ontario College of Art and Design University, 2017-2019, Peter Coppin

RESEARCH INTERESTS:

- Nonvisual and cross-sensory digital representations
- Inclusive Design
- X Reality, Virtual Reality, Augmented Reality, and Mixed Reality for nonvisual users
- Technology transfer, knowledge transfer, small business, action research, and entrepreneurship

BUSINESS ACCELERATORS AND INCUBATORS

- Access to Success Accelerator, fall 2025 cohort.
- 2Gether International, Health Startups 2025 cohort, Summer 2025.
- MassChallenge Impact Startup cohort, Winter 2025.
- MassChallenge Accelerator with Perkins School for The Blind, Summer 2024.
- Remarkable Accelerator, Summer 2023.

- Create-X Accelerator, Georgia Tech, summer 2023.
- Accelerate, Impact Center, winter 2021.
- Start Up, Impact Center, summer 2021.
- IMPACT Boot Camp, Impact Center, Spring 2021.

STUDENT SUPERVISION AND INTERNS:

- High School Intern Summer 2021
- One grad student supervision fall 2021
- Nine (6 grad, 3 undergrad) student supervisions Spring 2022
- Two (1 grad, 1 undergrad) student supervisions Summer 2022
- One intern Summer 2022
- Four (1 grad, 3 undergrad) student supervisions Fall 2022
- Five (2 grad, 3 undergrad) student supervisions Spring 2023
- Six (2 grad, 4 undergrad) student supervisions Fall 2023
- Five (2 grad, 3 undergrad) student supervisions Spring 2024

BUSINESS WORK EXPERIENCE:

- Engineer I, Smith-Kettlewell Eye Research Institute, Fall 2019 - Present. Lead the Magic Map project, building an accessible, cross-sensory XR map for the Magical Bridge playground in Palo Alto. Lead the Audiom project to provide a cross-sensory digital map component, managed developers, created the design, and developed the auditory map experience. Designed CamIO application and performed studies on the interface. Performed studies evaluating the TMAPs project.
- CEO and founder, XR Navigation, May 2020, present. Oversaw development of an XR cross-sensory navigational experience at the Magical Bridge Playground in Palo Alto utilizing CamIO, Audiom, and an indoor wayfinding application.
- Chief Financial Officer, co-founder, board treasurer, Sonja Biggs Educational Services, Inc. from fall 2015-August 2023. Grew revenue 2300% in eight years from $130,000-3,000,000, led incorporation, built finance, HR, and management teams, wrote employee handbook, created pay schedule, developed interview and onboarding process, maintain financials, manage finance team, developed marketing mix, led development of a training program for four employee categories, created tech rental program, developed logging system, and created standards for system acquisition. Researched and implemented accessible systems for timekeeping, finance, logging, payroll, and document management. Taught students and teachers assistive technology (AT), and managed company IT and AT.

PRODUCT DEVELOPMENT:

- Designed and managed the creation of a professional services automation system progressive web app for log entry and report generation. Wrote the specifications, created milestones and deliverables, managed front-end and back-end programmers, performed user testing, and managed migration from a Google sheets based system to this system. The system ran on Postgres, React, AG Grid, React Admin, and FeathersJS.

- Designed and tested CamIO (Camera Input Output), a computer vision application to annotate 3D objects. Designed and tested the IOS app, and performed studies evaluating the user experience.
- Lead development on Audiom (audiom.xrnavigation.io), a cross-sensory web component tool using JavaScript, Node and React. Developed the Auditory experience using Web Audio API, event handling, collision detection, Web Speech API, Aria, and state management. Managed developers to meet deadlines, and performed user testing. Along with the team, developed on the full application stack (front-end and back-end) using Node, Express, FeathersJS, Postgress SQL, Sequelize, React, Auth0, and Vaadin components.
- Lead a team in building a trimodal cross-sensory map for the Magical Bridge Foundation that I used in a co-design and study. The map will be placed in every MB playground. The map consisted of a miniature 3D tactile representation of the playground combined with a 3D auditory landscape that users heard as they moved a stylus around the map. When they touched the stylus to an object, it spoke the label of that object using CamIO.
- Created a MUD map of and for the inclusive design exhibition at the International Conference of Cognitive semiotics 2018 using Evennia (python mud framework) and AWS EC2.
- Built a prototype nonvisual baby doppler monitor using Arduino that plays a song at the tempo of the heartbeat, unless the heartbeat is out of the expected range, then it plays an alarm.
- Created an auditory data visualization of Charles Minard's infographic of Napoleon's March of 1812 using React, Web Audio API, Web Speech API, and Aria that was based off a co-design session I coordinated with 5 blind users.
- Built an auditory globe using React, web Audio API, web speech API, and aria incorporating collision detection in multipolygons from geojson data, and implemented latitude and longitude in a non-Euclidean plane.
- Created the software for a multisensory art exhibit at the Art Gallery of Ontario. Created a Python-based dynamic soundscape with 3D panning and event handler running on pyaudiogame and Pygame on a raspberry pi and Arduino.
- Created and manage the EmpowermentZone GitHub organization page, run their email list, and manage their GitHub projects.
- Created Pyaudiogame, an audiogame library based off pygame that is on PyPi, developed the event system, created algorithms for 3D audio, Cartesian plane navigation with polygon placement and collision detection, keymap, ability to use both console and pygame input and output, allows TTS output and managed the GitHub repository.
- Built a system for service logs in Google Apps Scripting (JavaScript) that was used for four years by all SBES employees and handled over 10000 logs a year. The system used GSheets as the database and viewer. Created text parsing from submissions to fill other fields and error check, automated the creation of new sheets when customers were added, created a batch log entry system, and created invoice totals with multiple price books.
- Developed an engine for console adventure games in python, did system input, made the event system and main loop.

- Made an inclusively designed flashcard game in Python using the Ivona Web Speech API, Pygame and accessible_output2.
- Manage and created my own website, brandonkeithbiggs.com using WordPress. Built my own child theme using PHP.
- Led a group in the design thinking process as a part of the product and pricing class at CSU East Bay.
- Manage the development of a full visually impaired program service and product bundle at SBESInc that has increased sales over 1400% in five years.

TECHNICAL SKILLS:

- Languages: JavaScript, Python, SQL, Google Apps Script, Arduino, HTML
- Server Frameworks: Express, Feathers, NoteJS, Django
- Web Frontend Frameworks: React, JQuery
- Knowledge of Aria and Web Content Accessibility Guidelines (WCAG 2.1)
- Application Engines: Panda3D, Pygame, Pyglet
- Content Management Systems: WordPress
- Knowledge of Git, GitHub, AWS, Heroku, and Google Cloud

ASSISTIVE TECHNOLOGY AND CODE CONTRIBUTIONS:

- Have made several pull requests on the WebXR specification increasing the use of nonvisual language and connecting the visual API to the audio API
- Do frequent user experience and web accessibility reviews for QuickBooks Online from Intuit, 2016-present. Describe how to fix elements with Aria and HTML, present inclusive design techniques at internal conferences, and suggest component design.
- Open accessibility-related issues and pull requests on opensource projects including Vaadin Components, Mozilla Hubs, IBM-Carbon-React, AccDC -React, tenon-ui, storybook, Cupper, and freeCodeCamp.
- Frequently open bugs and suggest solutions on projects such as OpenCV, GSuite products, Chrome, Firefox, Edge, IOS, Windows, and NVDA.
- Taught assistive technology privately at CSU East Bay (January 2016 to June 2016).
- Use screen reading technology such as NVDA, Voiceover and Jaws, used accessible PDAs, Braille displays and other tech daily from 2005 to present.
- Private contracted with Vista Center for the Blind as a technology teacher, teaching Jaws and basic computer skills in the summer of 2012.

ACTIVITIES AND SKILLS:

- Public Speaking: Spoke on numerous youth panels and led workshops at conferences with CTEBVI, CAOMS, ACB, NFB, Vista Center and Lions Club.
- Went to Italy on a yearlong study abroad program to learn Italian and business in 2014
- Languages: Speaks English fluently and Italian conversationally
- Is a professional Opera singer
- Theater & Film: Performed in nineteen musicals and films including Beauty & the Beast, La Boheme, Les Miserables, Oliver, Fiddler, and Camelot

- Expert at working remotely: completed two years of master's degree and worked since 2015 years at SBES remotely, and worked since 2020 at Smith-Kettlewell remotely