Chris **Brozdowski**, Ph.D.

SOFTWARE DEVELOPER · DATA ENGINEER · PROJECT MANAGER

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"Efficiency is doing things right; effectiveness is doing the right things." – Peter Drucker

Profile

I am driven to find efficiencies by applying automation and reforming processes. I have 10 years of experience in data management, analytics, visualization, leadership, and dynamically acquiring project-relevant skills. In my current position, I manage a shared SQL database, and lead the development of a Python-based interface and workflow orchestration system, using Docker, git, and JupyterHub. I want to be the rising tide that lifts all ships as I continue to grow as a software developer, data engineer and project manager.

Education

San Diego State University & University of California, San Diego   *San Diego, California*

PH.D. IN LANGUAGE AND COMMUNICATIVE DISORDERS   *2013 - 2018*

University of Connecticut   *Storrs, Connecticut*

B.S., COGNITIVE SCIENCE & LINGUISTICS AND PSYCHOLOGY, MAGNA CUM LAUDE   *2009 - 2013*

Experience

University of California, San Francisco   *San Francisco, CA*

COMPUTATIONAL AND DATA SCIENCE RESEARCH SPECIALIST III   *2023 -*

- Lead development of Spyglass, a data management, analysis, and visualization platform, to improve research efficiency and reproducibility.
- Introduced novel software strategies to shared data infrastructure to improve efficiency and add features to underlying DataJoint framework, including selective SQL database export, pipeline versioning mechanisms, and centralizing code with class inheritance.
- Hosted quarterly workshops to train lab members in software- and pipeline-development as well as developing their work into sharable packages.

DataJoint   *Houston, TX*

NEUROSCIENCE DATA ENGINEER II   *2021 - 2023*

- Developed data management, analysis, and visualization pipelines using Python, GitHub, MySQL, Docker, and Plotly for multi-site neurobiology research to improve efficiency through RDS automation. Led development of a pipeline for managing ML/AI pose-estimation models.
- Worked with clients to build custom data infrastructure, including API import/export tools, to automate pipelines deployed in AWS cloud.
- Parameterized pytest integration testing, and developed mkdocs documentation using gh-actions to improve open-source contributor experience.
- Led the development of communication strategies for YouTube content and conference sales-lead cultivation.
- Conducted UX interviews to improve tool utility and leveraged interview format into into social media content to promote product offerings.
- Developed company graphic design assets using Adobe Suite to improve brand cohesion across social media, documentation, and presentations.

Brain Development Lab, Vanderbilt University   *Nashville, TN*

POSTDOCTORAL RESEARCHER   *2019 - 2021*

- Implemented experimental and data management procedures using Shell and Excel to ensure reliable testing and open-science transparency.
- Analyzed open-source datasets using Shell, MATLAB, and R to contribute to scientific literature on the neural correlates of reading skill.
- Mentored undergraduate and masters students in the development of key research skills, including data integrity and standardization best practices.

Cognitive Semiotics Lab, RWTH Aachen University   *Aachen, Germany*

POSTDOCTORAL RESEARCHER   *2018 - 2019*

- Developed novel experiments using Optitrack motion capture technology and MATLAB to explore fine-motor control among signers.
- Collaborated with acoustics and virtual reality teams to contribute to the scientific literature on naturalism-perception effects in virtual reality.
- Taught and co-taught undergraduate and masters courses related to statistics, psychology, and linguistics across local and partner universities.

Laboratory for Language and Cognitive Neuroscience, San Diego State University   *San Diego, CA*

GRADUATE RESEARCHER   *2013 - 2018*

- Adapted psycholinguistic behavioral and fMRI paradigms for sign language research, including spatial cognition, co-thought gesture, and motor simulation. Organized and analyzed resulting data with Shell, Excel, R, ANCOVA, and linear mixed-effects models to contribute to scientific literature.
- Automated key aspects of experimental design, including transcription, randomization, stimulus presentation, and publication formatting, using Shell, Python, ffmpeg, and LaTeX. Improved iteration cycle for stimulus manipulation and presentation.
- Mentored a team of research assistants in statistical methods, transcription standardization, project management, and automation techniques.
- Shared scientific findings via conference posters, verbal presentations and manuscripts for peer-reviewed publications.

Skills

Programming & Analysis	Python, pytest, MATLAB, GitHub, Docker, AWS, Shell, LaTeX, relational databases, R, Excel, mixed-effects models.
Media & Graphic Design	Adobe Photoshop & Premiere, ffmpeg, data visualization (plotly, R), social media, brand cohesion.
Scientific Expertise	Pose estimation via machine learning models, neuroinfomatics methods, sign language psycholinguistics.
Communication	Scientific writing, dynamic educational public speaking, delegation, team leadership, decision facilitation.
Languages & Hobbies	English, French, American Sign Language. D&D, improv comedy, bouldering.

Academic publications

MANUSCRIPTS

Hyun Lee, K., Denovellis, E. et al. (2024). Spyglass: a data analysis framework for reproducible and shareable neuroscience research, *BioRxiv*.

Brozdowski, C., & Emmorey, K. (2023). Using transitional information in sign and gesture perception, *Acta Psychologica*, 236, 103923.

Emmorey, K., **Brozdowski, C.**, & McCullough, S. (2021). The neural correlates for spatial language: Perspective-dependent and -independent relationships in American Sign Language and spoken English, *Brain and Language*, 223, 105044.

Brozdowski, C. & Booth, J.R. (2021) Reading skill correlates in frontal cortex during semantic and phonological processing. *PsyArXiv*.

Brozdowski, C., Secora, K., & Emmorey, K. (2019). Assessing the Comprehension of Spatial Perspectives in ASL Classifier Constructions. *The Journal of Deaf Studies and Deaf Education* 24(3), 214-222.

Brozdowski, C. & Emmorey, K. (2020) Shadowing in the manual modality. *Acta Psychologica*, 108, 103092.

PRESENTATIONS

Brozdowski, C., Gunalan, K., Nguyen, T., Dincer, T., & Yatsenko, D. (2022). Automated Research Workflows for Pose Estimation, Neuromatch Academy, Virtual.

Gunalan, K., **Brozdowski, C.**, Nguyen, T., Dichter, B., Ruebel, O., Ly, R., & Yatsenko, D. (2022). Automated analysis and sharing of neuroscience data using DataJoint, Neurodata Without Borders, and DANDI. 8th Annual BRAIN Initiative Meeting, Virtual.

Dincer, T., Nguyen, T., Gunalan, K., **Brozdowski, C.**, & Yatsenko, D. (2022) A Complete Data Pipeline for Calcium Imaging in DataJoint. INCF Assembly, Virtual.

Kartheiser, G., Kurz, K., Emmorey, K., **Brozdowski, C.**, & Hauser, P. (2022). Learning Sign Language as a Second Language Facilitates Nonlinguistic Spatial Cognitive Skills. International Conference on Sign Language Acquisition, Virtual.

Brozdowski, C., Scruggs, A., Quinto-Pozos, D., Schuele, M., & Booth, J.R. (2020; canceled). Mapping reading networks in deaf & hearing children considering language modality. Society for the Scientific Study of Reading, Long Beach, California.

Ehret, J., Stienen, J., **Brozdowski, C.**, et al. (2020) Evaluating the Influence of Phoneme-Dependent Dynamic Speaker Directivity of Embodied Conversational Agents' Speech. Paper presented at ACM International Conference on Intelligent Virtual Agents, Glasgow, United Kingdom.

Brozdowski, C., & Emmorey, K. (2019). Using transitional information in sign and gesture prediction. Poster presented at Theoretical Issues in Sign Language Research, Hamburg, Germany.

Brozdowski, C., Tewari, A., & Mittelberg, I. (2019). Purposeful and Transitional Velocity among Sign Language Users: A Motion Capture Study. Poster presented at LingCologne2019: Multimodality, Cologne, Germany.

McCullough, S., **Brozdowski, C.**, & Emmorey, K. (2019, March). Neural correlates for comprehending perspective-independent and perspective-dependent spatial expressions in ASL and English. Poster presented at the Cognitive Neuroscience Society, San Francisco.

Brozdowski, C., & Emmorey, K. (2018, July). Shadowing linguistic and non-linguistic body movements. Paper presented at the International Society for Gesture Studies, Cape Town, South Africa.

Brozdowski, C., Emmorey, K. (2016). Co-Thought Gesture in Bimodal Bilinguals. Poster presented at the 12th Conference on Theoretical Issues in Sign Language Research. Melbourne, Australia.

Brozdowski, C., Gordils, J., Magnuson, J. (2013). Contra the Qualitatively Different Representation Hypothesis (QDRH), Concrete Concepts Activate Associates Faster than Abstract Concepts. Paper presented at the Annual Meeting of the Psychonomic Society, Toronto, Canada.

Brozdowski, C., Gordils, J., Magnuson, J. (2013). Using Text Instead of Pictures in the Visual World Paradigm: Phonological, Semantic, and Perceptual Similarity Effects. Poster presented at the Annual Meeting of the Psychonomic Society, Toronto, Canada.