

Kambiz "Kam" Tavabi Ph.D.

RESEARCH SCIENTIST · NEUROSCIENCE EXPERT

Seattle, WA

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Summary

Creative strategist with a growth mindset and over 13 years of experience leading end-to-end biomedical data science projects in neuropsychology. Excellent reputation for problem-solving and meeting client demands. Detail-oriented and highly organized worker committed to achieving demanding data analysis, research and development objectives according to tight schedules while producing high-quality results.

Work Experience

University of Washington

Seattle, WA

Research Science Engineer

2011 - 2023

- **Leveraged subject matter expertise and analytical skills to develop workflows for data collection, engineering, analysis, and reporting** on early childhood learning & neurodevelopmental disorders in pediatric populations at the *Institute for Learning & Brain Sciences*.
- Used effective verbal and written communications to **collaborate with colleagues of various backgrounds** and manage research grants for **developing data analysis plans, overseeing data management, coding, and analytics planning**.
- Leveraged interpersonal and leadership skills to **serve as a key data advisor to department leadership, senior researchers, and students for making recommendations to shape policies and programs** to meet data science objectives.
- Collaborated with distributed development teams to build PYTHON applications and **provided technical assistance to researchers for evaluation and data reporting activities**.
- **Employed quantitative evaluation methods (survey development, analytics, and advanced statistics)** to develop workflows for **data visualization, data management, modeling, and peer-reviewed reporting** in scientific journal publications.
- Helped develop PYTHON applications (*MNEFUN*, *MNE-BIDS*, & *MNE*) used to **design monitoring, reporting, and continuous quality improvement** for dense-array timeseries data.

The Children's Hospital of Philadelphia

Philadelphia, PA

Post Doctoral Researcher

2008 - 2011

- Leveraged subject matter expertise and **quantitative (survey development, analytics, and advanced statistics) evaluation methods** to develop experimental designs and protocols for medical imaging technologies at the *Lurie Family Foundations MEG Imaging Center* to study behavioral impairments in a large case-control, a longitudinal pediatric cohort with autism.
- **Improved the reliability of diagnostic medical exams for presurgical planning in pediatric epilepsy patients** and earned a college Loan Repayment award for outstanding translational biomedical research from the National Institute of Health.
- Leveraged understanding of data models and statistics to **overhaul technical analysis of quantitative** longitudinal data and co-author a highly-cited scientific journal publication.
- Used effective verbal and written communications to **create deliverables (PowerPoint presentations, written reports, visualizations) to communicate results and investment impacts to internal and external stakeholders**.
- **Planned and instructed a seminar in applied statistics** to help train first-year medical school residents to generate research and development output (e.g., data review, metrics, hypothesis testing) and facilitate clinical data science objectives.

Education

University of Münster

Münster, Germany

Doctor of Philosophy

2004 - 2007

- Completed a doctoral dissertation exploring the neuroscience of auditory phonological processing during speech perception using electrophysiology and neuroimaging technologies at the *Institut für Biomagnetismus und Biosignalanalyse*.
- **Courses:** Digital Signal Processing, Electrophysiology, Neuroscience, Psycholinguistics, Neuropsychology

University of Oregon

Eugene, OR

Master of Science

2001 - 2003

- Earned a terminal M.Sc. degree in psychology with a specialization in cognition in the *Brain Development Lab*.
- **Courses:** Magnetic Resonance Imaging, Philosophy of Mind, Statistics for Data Analysis, Neurobiology of Attention & Arousal, Cognitive Psychology, Social & Personality Psychology, Developmental Psychology, Neuroplasticity, Principles of Psychology, Modern Investigation Methods in Human Neuroscience, Evolution of Mind

University of California Los Angeles

Los Angeles, CA

Bachelor of Science

1995 - 2000

- Completed a general B.Sc. degree with a specialization in vertebrate physiology.
- Courses:** Neurobiology of Learning & Memory, Biological Basis of Psychiatric Disorders, Genetics, Vertebrate Physiology, Chemistry, Organic Chemistry, Biology, Physics, Calculus, Linear Algebra, Logic

Achievements

2023	Certificate of Completion , <i>Data Visualization with Python</i>	USA
2023	Certificate of Completion , <i>Data Science Orientation</i>	USA
2023	Certificate of Completion , <i>Certified SQL Developer</i>	USA
2022	Certificate of Completion , <i>Statistical Learning</i>	USA
2012	Certificate of Completion , Elekta Neuromag® MEG Advanced Program	Helsinki, Finland
2011	Digital SLR Photography , Nikon School	USA

Skills

Technical

Experimentation, Digital Signal Processing, Case-control Design, Longitudinal Data, Exploratory Data Analysis, Data Visualization, Data Mining, Statistical Analysis (A/B testing, Analysis of Variance, General Linear Model), Machine Learning, Github, PYTHON, R (ggplot2, lme4, Tidyverse), HUGO HTML/CSS, SQL, MATLAB, Linux, MacOS, Windows, Shell (Bash/Zsh), \LaTeX (Overleaf/R Markdown), Git

Soft

Presentation, Time Management, Teamwork, Problem Solving, Documentation, Scientific Writing, Grant Management, Research, Mentoring

Languages

English	Native
Farsi	Fluent
Spanish	Conversant

Projects

Automaticity in the reading circuitry

Seattle, WA

University of Washington

2015 - 2019

- Measured brain activity in school-aged children (N = 42, 7–12 years of age) with magnetoencephalography to examine word-selective brain responses during reading.
- Developed data acquisition procedures and PYTHON routines for digital signal processing, dimensionality reduction (PCA), data transformations, and 3D statistical modeling of dense-array timeseries data.

Effectively combining temporal projection noise suppression methods in magnetoencephalography

Seattle, WA

University of Washington

2018 - 2020

- Mentored a graduate student with data visualization, analysis, and manuscript preparation for a study describing the efficacy of various noise subspace projection methods for preprocessing dense-array electrophysiology data before 3D statistical modeling.

Mne-Bids: Organizing Electrophysiological Data into the Bids Format and Facilitating Their Analysis

Seattle, WA

University of Washington

2018 - 2019

- Collaborated with an international team of software engineers to create open-source Python applications to speed up analyses, enhance code reliability, and facilitate data and code sharing amongst co-workers and collaborators.

Using magnetoencephalography to examine word recognition, lateralization, and future language skills in 14-month-old infants

Seattle, WA

University of Washington

2014 - 2019

- Investigated early childhood language learning by combining neuropsychological measurements and experimental word discrimination paradigm in a cohort of typically developing infants (N = 27, 39–42 weeks old).
- Developed data acquisition procedures and built PYTHON routines for digital signal processing, data mining, feature engineering, and regression model to assess the relationship between neuropsychological and prospective behavioral performance measurements of vocabulary growth.

Auditory Magnetic Mismatch Field Latency: A Biomarker for Language Impairment in Autism

Philadelphia, PA

The Children's Hospital of Philadelphia

2010 - 2011

- Leveraged nonparametric linear mixed modeling to overhaul statistical analysis of a large dataset containing neuropsychological measurements of speech discrimination in children diagnosed with autism spectrum disorders (N = 51, 6–15 years of age) and used receiver operator characteristic analysis to characterize diagnostic sensitivity and specificity for language impairment based on neuropsychological measurements.

Publications

JOURNAL ARTICLES

Using Magnetoencephalography to Examine Word Recognition, Lateralization, and Future Language Skills in 14-Month-Old Infants

Alexis N. Bosseler, Maggie Clarke, Kambiz Tavabi, Eric D. Larson, Daniel S. Hippe, Samu Taulu, Patricia K. Kuhl

Developmental Cognitive Neuroscience 47 (Feb. 2021) p. 100901. 2021

Automaticity in the Reading Circuitry

Sung Jun Joo, Kambiz Tavabi, Sendy Caffarra, Jason D. Yeatman

Brain and language 214 (Mar. 2021) p. 104906. 2021

Effectively Combining Temporal Projection Noise Suppression Methods in Magnetoencephalography

Maggie Clarke, Eric Larson, Kambiz Tavabi, Samu Taulu

Journal of Neuroscience Methods 341 (July 2020) p. 108700. 2020

MNE-BIDS: Organizing Electrophysiological Data into the BIDS Format and Facilitating Their Analysis

Stefan Appelhoff, Matthew Sanderson, Teon Brooks, Marijn van Vliet, Romain Quentin, Chris Holdgraf, Maximilien Chaumon, Ezequiel Mikulan, Kambiz Tavabi, Richard Höchenberger, Dominik Welke, Clemens Brunner, Alexander Rockhill, Eric Larson, Alexandre Gramfort, Mainak Jas

Journal of Open Source Software 4.44 (Dec. 2019) p. 1896. 2019

Auditory Magnetic Mismatch Field Latency: A Biomarker for Language Impairment in Autism

Timothy P.L. Roberts, Katelyn M. Cannon, Kambiz Tavabi, Lisa Blaskey, Sarah Y. Khan, Justin F. Monroe, Saba Qasmieh, Susan E. Levy, J. Christopher Edgar

Biological psychiatry 70.3 (Aug. 2011) pp. 263–269. 2011

Spectral–Temporal Analysis of Cortical Oscillations during Lexical Processing

Kambiz Tavabi, David Embick, Timothy P.L. Roberts

NeuroReport 22.10 (July 2011) pp. 474–478. 2011

Word Repetition Priming-Induced Oscillations in Auditory Cortex: A Magnetoencephalography Study

Kambiz Tavabi, David Embick, Timothy P.L. Roberts

NeuroReport 22.17 (Dec. 2011) pp. 887–891. 2011

Effects of Place of Articulation Changes on Auditory Neural Activity: A Magnetoencephalography Study

Kambiz Tavabi, Ludger Elling, Christian Dobel, Christo Pantev, Pienie Zwitserlood

PLoS ONE 4.2 (Feb. 2009) e4452. 2009

Auditory Evoked Fields Differentially Encode Speech Features: An MEG Investigation of the P50m and N100m Time Courses during Syllable Processing: Evoked Fields Encode Speech Features

Kambiz Tavabi, Jonas Obleser, Christian Dobel, Christo Pantev

European Journal of Neuroscience 25.10 (June 2007) pp. 3155–3162. 2007

The Growth of the Feline Brain from Fetal into Adult Life: II. A Morphometric Study of Subcortical Nuclei

Jaime R Villablanca, Troy D Schmanke, Harmony A Crutcher, Angie C Sung, Kambiz Tavabi

Developmental Brain Research 122.1 (July 2000) pp. 21–33. 2000