

Jennifer K Briggs

PH.D. BIOENGINEERING CANDIDATE | EXPERTISE IN AI, SIGNAL PROCESSING, DIABETES PATHOGENESIS, AND DATA ANALYSIS

7192097590 | JENNIFER.KL.BRIGGS@GMAIL.COM | JENNIFERKBRIGGS.GITHUB.IO | LINKEDIN.COM/IN/JENNIFER-BRIGGSPHYSICS | PUBLICATIONS

About Me

Ph.D. candidate in Bioengineering with expertise in signal processing, data science, diabetes pathogenesis, and computational modeling. Available to begin work August 1, 2025. Proven track record working with experimentalists, clinicians, and engineers. Expertise developing and validating predictive models, analyzing high-dimensional clinical and physiological datasets, and contributing to interdisciplinary research.

Experience

Department of Bioengineering, University of Colorado Anschutz

Graduate Research Assistant

Aurora, Co

May 2020-Present

- Thesis: *Computational Dynamical Systems Approaches to Infer Unobserved Processes for Biomedical Applications in Diabetes and Cerebral Vascular Regulation*
- Developed, validated, and estimated a novel ordinary differential equations model of cerebral blood flow using Markov Chain Monte Carlo to serve as a **digital twin for clinical decision support**. Achieved a tenfold improvement in cerebral blood flow prediction accuracy compared to deep learning models.
- Trained deep learning and machine learning algorithms for **predictive modeling of complex clinical datasets**, including electronic health records.
- Simulated an electrophysiologic model of the islet using **signal processing**, network theory, and information-theoretic methods to **identify novel physiological mechanisms underlying diabetes**.
- Documented technical findings in peer-reviewed publications and presented at international conferences, including: **European Association for the Study of Diabetes, American Diabetes Association, Biophysical Society, Society of Industrial and Applied Mathematics**.

University of Colorado Anschutz

Analytical Methods and Machine Learning: Teaching Assistant

Aurora, Co

Aug 2022 - Jan 2023

- Supported coursework in foundations of **deep learning, numerical methods, differential equations, and machine learning**.

Joint Appointment at NASA Goddard and Pepperdine University

Research Intern

Maryland and California

Aug 2017 - May 2020

- Conducted **multimodel Signal Processing and image analysis**, leading to the discovery of **previously undocumented ionospheric phenomena**.
- Led lab meetings, research agendas, and organized opportunities for 15 undergraduate researchers to present at three international conferences.

Technical Expertise

Data Science Artificial Intelligence, Machine Learning, Signal Processing, Image Processing, Optimization, Data Assimilation

Modeling & Simulation ODE-based Simulations, Dynamical Systems, Physiological and Multiphysics Modeling

Software & Tools MATLAB, Python, R, High-Performance Computing (NVIDIA clusters, Linux)

Education

University of Colorado Anschutz

Bioengineering Ph.D. Candidate, **GPA: 4.0**

Aurora, Co

May 2020 - 2025 (Expected June)

- **Notable awards and certifications:** NSF Graduate Research Fellow (2021-2025), SIGHPC Association for Computational Machinery Fellowship Recipient (2023), Concordia Consortium for Study of Diabetes Fellow (2024), Santa Fe Institute Complexity Systems Summer School (2022)

Sante Fe Institute

Complexity Systems Summer School

Sante Fe, NM

2022

- Month long intensive education on state of the art Complexity Science

Pepperdine University

Double Major: Bachelor of Science in Physics and Sports Medicine, **Minor:** Applied mathematics

Malibu, CA

Aug 2016 - May 2020

- **GPA:** 3.9/4.0, *Summa Cum Laude*
- **Notable awards:** Natural Science Student of the Year (out of ~200 students), Physics Student of the Year, Edison Achievement Scholarship (\$12000/year), Faculty and Staff Scholarship (\$5000/year), Rosemarry Raitt Endowed Scholarship (\$12000/year), Natural Science Award, Pepperdine Grant

Selected Publications & Talks

For a complete list of my publications, please refer to my Google Scholar profile (hyperlink available at the top right of this CV).

- Beta-cell intrinsic dynamics rather than gap junction structure dictates subpopulations in the islet functional network. *Elife*, (2023)
- Constructing a Digital Twin of Cerebral Hemodynamics. AMIA 2024 (Top 20 Symposia), BMES 2024, *Presentation attached to application*
- Personalizing the Pressure Reactivity Index for Neurocritical Care Decision Support. *IEEE Transactions in Biomedical Engineering* (2025)