Sonny T. Jones (He/Him/His)

Email: sonny.jones@utah.edu
LinkedIn, Website, GitHub

Interests

Machine Learning, Reinforcement Learning, Deep Learning, Artificial Intelligence, Robotics, Neural Engineering, Neural Interfaces, Video Games, Weightlifting, PC Enthusiast

Education

Doctor of Philosophy, Biomedical Engineering *2023 - 2028*

University of Utah, Salt Lake City, Utah, USA

Advisor: Ashley Dalrymple

Master of Science, Biomedical Engineering *2023 - 2028*

University of Utah, Salt Lake City, Utah, USA

Bachelor of Science, Biomedical Engineering *2021*

University of Utah, Salt Lake City, Utah, USA

Thesis: *"Development of Electrocardiographic Measures for Cognitive Load During Prosthesis Use"*

Advisor: Michael Paskett, Gregory Clark

Experience

Graduate Research Assistant *2023 - Present*

Neural Engineering for Rehabilitation Via Electrical Stimulation (NERVES) Lab

Department of Biomedical Engineering, University of Utah, Salt Lake City, Utah, USA

Mentor: Ashley Dalrymple

Post-Baccalaureate Research Assistant *2022 - 2023*

Utah NeuroRobotics Lab

Department of Electrical and Computer Engineering, University of Utah, Salt Lake City, Utah, USA

Mentor: Jacob George

Research Analyst/Assistant *2021 - 2023*

Trajectories of Resilience, Community, and Health (TORCH) Lab

Division of Epidemiology, Department of Medicine, University of Utah School of Medicine, Salt Lake City, Utah, USA

Mentor: Mary Jo Pugh

Undergraduate Research Assistant *2019 - 2021*

Center for Neural Interfaces

Department of Biomedical Engineering, University of Utah, Salt Lake City, Utah, USA

Mentor: Gregory Clark

Certifications

Deep Learning Certificate *2025*

College of Engineering, University of Utah, Salt Lake City, Utah, USA

Reinforcement Learning Specialization *2023*

University of Alberta and Alberta Machine Intelligence Institute on Coursera

Machine Learning Scientist *2022*

DataCamp

Data Science Professional *2022*

DataCamp

Grants

Graduate Student Travel Assistance Award *2025*

The Graduate School, University of Utah, Salt Lake City, Utah, USA

Undergraduate Research Opportunity Program Grant *2020*

Office of Undergraduate Research, University of Utah, Salt Lake City, Utah, USA

Office of Undergraduate Research Small Grant *2019*

Office of Undergraduate Research, University of Utah, Salt Lake City, Utah, USA

Undergraduate Research Opportunity Program Grant *2019*

Office of Undergraduate Research, University of Utah, Salt Lake City, Utah, USA

Scholarships

Campbell Endowed Fellowship *2023 - 2026*

College of Engineering, University of Utah, Salt Lake City, Utah, USA

John C. Jackson Trust Scholarship *2021*

College of Engineering, University of Utah, Salt Lake City, Utah, USA

Dee Undergraduate Research Scholarship *2020*

Office of Undergraduate Research, University of Utah, Salt Lake City, Utah, USA

President's Scholarship *2017-2021*

University of Utah, Salt Lake City, Utah, USA

Peer-Reviewed Journal Publications

Published

1. AN Dalrymple, **ST Jones**, JB Fallon, RK Shepherd, DJ Weber, "Overcoming Failure: Improving Acceptance and Success of Implanted Neural Interfaces", *Bioelectronic Medicine, Special Issue for Neural Interfaces*, vol 11, **2025**.
2. K North, **ST Jones**, GM Simpson, AN Dalrymple, "Personalized Gait Rehabilitation with Spinal Cord Stimulation and Machine Learning: Recent Advances and Promising Applications", Invited Review, *Current Opinions in Biomedical Engineering: Bioelectronic Medicine*, vol 34, **2025**.

Pre-Print

1. MD Paskett, JK Garcia, **ST Jones**, MR Brinton, TS Davis, CC Duncan, JM Cooper, DL Strayer, GA Clark, “Improving Upper-limb Prosthesis Usability: Cognitive Workload Measures Quantify Task Difficulty”*, medRxiv*, **2022.**

In Preparation

1. CV Ihediwa*, KJ Valestrino*, J Hernandez-Bello, Aubrey Andrus, **ST Jones**, AS Gandhi, AN Dalrymple, “Automated identification of spinal vertebrae and spinal cord stimulation electrodes from fluoroscopic images”.
2. GM Simpson, **ST Jones**, WMJ Young, K North, AN Dalrymple, “Biomechanical adjustments of the lower-limbs when approaching new terrains during walking”.

Conference Proceedings

Published

1. GM Simpson, K North, **ST Jones**, AN Dalrymple, “A Novel Template-Matching Method for Extracting Gait Cycles from Underfoot Pressure Data”, *IEEE International Consortium for Rehabilitation Robotics (ICORR), RehabWeek,* May **2025**.
2. **ST Jones**, GM Simpson, WMJ Young, K North, PM Pilarski, AN Dalrymple, “Comparative Analysis of Temporal-Difference Learning Methods to Learn General Value Functions of Lower-Limb Signals”, *IEEE International Consortium for Rehabilitation Robotics (ICORR), RehabWeek,* May **2025**.

Preprint

1. **ST Jones**, GM Simpson, PM Pilarski, AN Dalrymple, “Hierarchical Reinforcement Learning Framework for Adaptive Walking Control Using General Value Functions of Lower-Limb Sensor Signals”, Accepted to *Multi-Disciplinary Conference on Reinforcement Learning and Decision Making (RLDM)*, preprint on arXiv:2507.16983, Dublin, IRL, Jun **2025**.

Other Publications

Undergraduate Research Journal

1. **ST Jones**, MD Paskett, GA Clark, CC Duncan, “Development of Electrocardiographic Measures for Cognitive Load During Prosthesis Use*”, Undergraduate Research Journal, University of Utah,* vol 22, **2021**.

Oral Presentations

1. **ST Jones**, GM Simpson, WMJ Young, K North, PM Pilarski, AN Dalrymple. “Comparative Analysis of Temporal-Difference Learning Methods to Learn General Value Functions of Lower-Limb Signals”, *IEEE International Consortium for Rehabilitation Robotics (ICORR), RehabWeek,* May **2025**.

2. **ST Jones**, MD Paskett, GA Clark, CC Duncan. “Development of Electrocardiographic Measures for Cognitive Load During Prosthesis Use.*” BME Undergraduate Research Symposium*, Salt Lake City, UT, USA, April **2021**.

Poster Presentations

1. **ST Jones**, GM Simpson, PM Pilarski, AN Dalrymple, “Hierarchical Reinforcement Learning Framework for Adaptive Walking Control Using General Value Functions of Lower-Limb Sensor Signals”, *Inaugural Utah AI Summit*, Salt Lake City, UT, USA, Jun **2025**.
    - 3rd Place Poster Lightning Talk
2. **ST Jones**, GM Simpson, PM Pilarski, AN Dalrymple, “Hierarchical Reinforcement Learning Framework for Adaptive Walking Control Using General Value Functions of Lower-Limb Sensor Signals”, *Multi-Disciplinary Conference on Reinforcement Learning and Decision Making (RLDM)*, Dublin, IRL, Jun. **2025**.
3. **ST Jones**, GM Simpson, PM Pilarski, AN Dalrymple. “Classification of Walking Terrain Using Actual and Predicted Lower-Limb Sensor Signals”. *Rocky Mountain American Society of Biomechanics (RMASB)*, Estes Park, CO, USA, April **2025**.
    - Best PhD Poster in Session
4. **ST Jones**, GM Simpson, WMJ Young, K North, PM Pilarski, AN Dalrymple. “Predicting Sensor Signals During Walking Over Different Terrains Using Reinforcement Learning.” *Utah Biomedical Engineering Conference (UBEC)*, Salt Lake City, UT, USA, Sep **2024**.
    - Top 12 Poster Grand Rounds
5. **ST Jones**, GM Simpson, K North, PM Pilarski, AN Dalrymple. “Predicting Terrain Transitions After Stroke Using Reinforcement Learning Methods”. *James R. Swenson, MD Scientific Symposium Day*, Salt Lake City, UT, USA, May **2024**.
6. **ST Jones**, GM Simpson, K North, PM Pilarski, AN Dalrymple. “Predicting Terrain Transitions After Stroke Using Reinforcement Learning Methods”. *Rocky Mountain American Society of Biomechanics (RMASB)*, Estes Park, CO, USA, April **2024**.
7. **ST Jones**, MD Paskett, GA Clark, CC Duncan. “Development of Electrocardiographic Measures for Cognitive Load During Prosthesis Use*”. BME Undergraduate Research Symposium*, Salt Lake City, UT, USA, April **2021**.

Conference Abstracts

1. WMJ Young, GM Simpson, **ST Jones**, K North, PM Pilarski, AN Dalrymple. “Optimizing Sensor Placement for Terrain Classification”, *Inaugural Utah AI Summit*, Salt Lake City, UT, USA, Jun **2025**.
2. CV Ihediwa, KJ Valestrino, **ST Jones**, JH Bello, AN Dalrymple, “Image Processing of X-Rays of the Spine and Spinal Cord Stimulation Implants”, *Inaugural Utah AI Summit*, Salt Lake City, UT, USA, Jun **2025**.

3. CV Ihediwa, KJ Valestrino, **ST Jones**, JH Bello, AN Dalrymple, “Image Processing of X-Rays of the Lumbar Spine and Spinal Cord Stimulation Implants”, *International Functional Electrical Stimulation Society (IFESS),* Chicago, IL, USA, May **2025**.
4. GM Simpson, K North, **ST Jones**, AN Dalrymple. “A Novel Template-Matching Method for Extracting Gait Cycles from Underfoot Pressure Data”, *Rocky Mountain American Society of Biomechanics (RMASB)*, Estes Park, CO, USA, April **2025**.
5. WMJ Young, GM Simpson, **ST Jones**, K North, PM Pilarski, AN Dalrymple. “Optimizing Sensor Placement for Terrain Classification”, *Rocky Mountain American Society of Biomechanics (RMASB)*, Estes Park, CO, USA, April **2025**.
6. CV Ihediwa, KJ Valestrino, **ST Jones**, JH Bello, AS Gandhi, AN Dalrymple, “Image Processing of X-Rays of the Lumbar Spine and Spinal Cord Stimulation Implants”, *Rocky Mountain American Society of Biomechanics (RMASB)*, Estes Park, CO, USA, April **2025**.
7. CV Ihediwa, KJ Valestrino, **ST Jones**, J Hernandez-Bello, AS Gandhi, AN Dalrymple, “Image Processing of X-Rays of the Lumbar Spine & Spinal Cord Stimulation Implants”, *Undergraduate Research Symposium*, Salt Lake City, UT, USA, April **2025.**
8. CV Ihediwa, KJ Valestrino, **ST Jones**, CT Stanley, AN Dalrymple, “Image Processing of X-Rays of the Lumbar Spine & Spinal Cord Stimulation Implants”, *Biomedical Engineering Society (BMES),* Baltimore, MD, USA, Oct **2024**.
9. GM Simpson, **ST Jones**, K North, PM Pilarski, AN Dalrymple, “Finding Optimal Sensor Combinations Across Variable Terrains Using tSNE And Reinforcement Learning”, *Utah Biomedical Engineering Conference (UBEC)*, Salt Lake City, UT, USA, Sep **2024.**
10. CV Ihediwa, KJ Valestrino, **ST Jones**, CT Stanley, AN Dalrymple, “Image Processing of X-rays of the Lumbar Spine and Spinal Cord Stimulation Implants”, *Utah Biomedical Engineering Conference (UBEC)*, Salt Lake City, UT, USA, Sep **2024**.
11. GM Simpson, **ST Jones**, K North, PM Pilarski, AN Dalrymple, “Optimal Body-Worn Sensors for Predicting Terrain Transitions While Walking”, *James R. Swenson Scientific Symposium Day,* Salt Lake City, UT, USA, May **2024.**
12. GM Simpson, **ST Jones**, K North, PM Pilarski, AN Dalrymple, “Optimal Body-Worn Sensors for Predicting Terrain Transitions While Walking”, *Rocky Mountain American Society of Biomechanics (RMASB)*, Estes Park, CO, USA, April **2024**.

Submitted

1. **ST Jones,** GM Simpson, PM Pilarski, AN Dalrymple, “Predicting Walking Terrains Using Machine Learning and Predictions of Body-Worn Sensor Signals”, *Society for Neuroscience,* San Diego, CA, USA, Nov **2025**.
2. GM Simpson, K North, **ST Jones,** WMJ Young, PM Pilarski, AN Dalrymple, “Don’t Be Trippin’: Understanding the Biomechanics of Walking Across Different Terrains”, *Society for Neuroscience,* San Diego, CA, USA, Nov **2025**.

3. K North, GM Simpson, **ST Jones**, C Andersen, AN Dalrymple, “Estimating Ground Reaction Force Waveforms from Shank-Mounted Inertial Measurement Unit Using Bidirectional LSTMs”, *Society for Neuroscience,* San Diego, CA, USA, Nov **2025**.
4. WMJ Young, GM Simpson, K North, **ST Jones**, PM Pilarski, AN Dalrymple, “Optimizing Sensor Placement for Terrain Prediction During Walking”, *Society for Neuroscience,* San Diego, CA, USA, Nov **2025**.
5. CV Ihediwa, KJ Valestrino, **ST Jones**, JH Bello, AN Dalrymple, “Automated Electrode Identification for Spinal Cord Stimulation Using nnU-Net Segmentation”, *Society for Neuroscience,* San Diego, CA, USA, Nov **2025**.

Teaching and Lectures

Teaching

- **Graduate Teaching Assistant, BME 3101 Biosignals Analysis** 2025
  University of Utah, Salt Lake City, Utah, USA

Guest Lecturer

- **Graduate Student Panel** *2024*
  BME 1010 Careers in Biomedical Engineering, University of Utah, Salt Lake City, Utah, USA
- **“Rehabilitative Robotics and Its Application in Stroke/Amputee Populations”** *2024*
  Robotics, West High School, Salt Lake City, Utah, USA
- **“Rehabilitative Robotics and Its Application in Stroke/Amputee Populations”** *2024*
  Principles In Engineering, West High School, Salt Lake City, Utah, USA

Student Mentorship

- **Chimdi Ihediwa** *2024 - 2025*
  Undergraduate Student, Department of Biomedical Engineering, University of Utah, Salt Lake City, UT, USA
  Role: Graduate Student Mentor
- **Wyatt Young** *2024 - 2025*
  Undergraduate Student, Department of Biomedical Engineering, University of Utah, Salt Lake City, UT, USA
  Role: Graduate Student Mentor

Open-Source Software and Data Repositories

1. BlyncsySFT
   Fine-tuning package for Faster R-CNN models.

2. Machine Learning Gait Front End
   Custom graphical user interface (GUI) and control software for synchronized data collection from Delsys Trigno EMG and XSensor wireless pressure insoles.

Academic Honors/Awards

Phi Eta Sigma Honors Society, University of Utah *2017*

Dean's List, University of Utah *2017 - 2021*

Service and Volunteerism

University

- **Chair, Curriculum Committee** *2025 - Present*
  Biomedical Engineering Graduate Student Advisory Committee (GSAC), University of Utah, Salt Lake City, Utah, USA
- **Volunteer, Inaugural Utah AI Summit** 2025
  John and Maria Price College of Engineering, University of Utah, Salt Lake City, Utah, USA
- **Volunteer, Biomedical Engineering Recruitment Weekend** *2025*
  Department of Biomedical Engineering, University of Utah, Salt Lake City, Utah, USA
- **Volunteer, National Biomechanics Day** *2024*
  University of Utah, Salt Lake City, Utah, USA
- **Volunteer, Biomedical Engineering Recruitment Weekend** *2024*
  Department of Biomedical Engineering, University of Utah, Salt Lake City, Utah, USA
- **External Vice President** *2019 - 2020*
  Vietnamese American Student Association (VASA), University of Utah, Salt Lake City, Utah, USA

Community

- **Judge Advisor Assistant** 2025
  Utah Regional First Robotics Competition, Salt Lake City, Utah, USA
- **Software Mentor** *2023 - 2024*
  First Robotics Competition, Red Rock Robotics, West High School, Salt Lake City, Utah, USA
- **Director of Patient Impact** *2022 - 2023*
  Project Embrace, West Jordan, Utah, USA
- **Member, Research Committee** *2021 - 2023*
  Project Embrace, West Jordan, Utah, USA
- **Director of Marketing and Community Engagement** *2021 - 2022*
  Project Embrace, West Jordan, Utah, USA
- **Community Outreach and Engagement Chair** *2020 - 2021*
  Southwest Union of Vietnamese Student Associations (SWUVSA)

- **Counsel of School Representatives (CoSR) Member** *2019 - 2020*
  Southwest Union of Vietnamese Student Associations (SWUVSA)
- **Emergency Room Volunteer** *2019 - 2020*
  University of Utah Hospital, Salt Lake City, Utah, USA
- **Medical Interpreter & Patient Assistance Program** *2019 - 2020*
  Maliheh Free Clinic, Salt Lake City, Utah, USA
- **Camp Counselor** *2018, 2019*
  Camp Anytown, Inclusion Center, Salt Lake City, Utah, USA

Media

Television

- **"Medical Innovations at the University of Utah"** *2022*
  University of Utah, The College Tour, Amazon