Prithul Sarker

(775) 460-8039 | prithulsarker@nevada.unr.edu | linkedin.com/in/prithulsarker/ | github.com/prithuls
Portfolio: https://prithulsarker.com/ | Google Scholar

Education

University of Nevada, Reno — Reno, NV
Ph.D. in Computer Science — *Jan. 2021 – Dec. 2024*

University of Nevada, Reno — Reno, NV
MS in Computer Science — *Jan. 2021 – May 2023*

Bangladesh University of Engineering and Technology — Dhaka, Bangladesh
BS in Electrical and Electronic Engineering, Minor in Telecommunication — *Feb. 2013 – Sep. 2017*

Technical Skills

Languages/Platforms: Python, R, C++, MATLAB, SQL, JavaScript, Bash, Docker
Python Libraries: Tensorflow, PyTorch, Pandas, Numpy, Matplotlib, Scikit-learn, Selenium
Research Area: Time Series Analysis, Pupillometry in Virtual Reality, Applied AI in Healthcare, Computer Vision

Summer Internship

Software Developer Intern — June 2023 – Aug. 2023
SGX3- Science Gateways (Texas Advanced Computing Center, University of Texas at Austin) — *Austin, TX*
- Developed applications for Frontera- world's fastest university supercomputer and 13th fastest supercomputer.
- Created interactive applications in HPC framework through remote desktop connections (i.e. VNC and DCV).
- Packaged HPC applications into docker and singularity applications and making it compatible with AI framework.

Education Mentor — May 2021 – Aug. 2021 & June 2022 – Aug. 2022
Army Educational Outreach Program (AEOP) — *Reno, NV*
- Mentored five high school students who assisted in one of my research projects by preprocessing data.

Experience

Graduate Research Assistant — Jan. 2021 – Present
University of Nevada, Reno — *Reno, NV*
- Currently leading an independent research project to develop and implement an ophthalmic assessment in VR.
- Utilized machine learning and generative modeling to predict and quantify defects in participants' vision.
- Secured a $50,000 grant as recognition for the potential impact and commercial viability of our innovation.
- Collaborated with the Neuromechanics lab on concussion detection using VR based ocular and vestibular data.

Team Lead / Senior Software Quality Assurance Engineer — Jan. 2020 – Dec. 2020
Software Quality Assurance Engineer — June 2019 – Dec. 2019
EchoLogyx Ltd. — *Dhaka, Bangladesh*
- Led the team to create a positive relationship with the clients contributing to 160% company growth in year 2020.
- Designed and wrote script for QA automation and scraping data from the client website.

Product Officer — July 2018 — May 2019
Loence Solution — *Dhaka, Bangladesh*
- Researched market and designed features and infrastructure of the enterprise resource planning (ERP) web app.

Assistant Engineer (Electrical) — Nov. 2017 – June 2018
Energypac Engineering Ltd. — *Dhaka, Bangladesh*
- Investigated issues, and troubleshot faults in the electrical system of transformers and other substation equipment.

Teaching Experience

Instructor- GRAD778: Elements of Research Computing — Fall 2023
University of Nevada, Reno — *Reno, NV*
- Designed and delivered comprehensive instruction to 70 graduate students on fundamental concepts of Linux OS.
- Co-instructed the Python modules and contributed to graduate students' proficiency in Python programming.

Teaching Assistant- CS791 Topics: Mass Detection in Mammograms — Fall 2023
University of Nevada, Reno — *Reno, NV*

Projects

ChatGPT Code Snippet Extension | *JavaScript, HTML, CSS* | GitHub — Feb 2023 – Present
- Developed a chrome extension which lets you save code snippet suggested by ChatGPT in your browser.

Bengali Video Maker Bot | *Python, Selenium, YouTube API* | GitHub | Demo — Oct. 2022 – Present
- Developed a bot that makes video in Bengali from Facebook posts using google voice and uploads in social media.

VR-Chess | *C++, Unreal Engine* | GitHub — Jan. 2022 – June 2022
- Implemented an interactive chess game in VR where the user can have a 3D view from any angle of the board.

Bangladeshi Student Association Website | *CSS* | GitHub | Demo — Jan. 2022 – Present

Social Media Interaction Bot | *Python, Selenium, HTML* | GitHub — Feb. 2020 – May 2020
- Created a bot that logs in social media (Twitter, Instagram, Facebook), and interacts (like, comment) with posts.

Face Recognition in Real Time Video | *Python, OpenCV* | GitHub — Oct. 2019 – Mar. 2020
- Implemented a python program to localize faces from real time video and recognize them with 85% accuracy.

Publications

Prithul Sarker, Nasif Zaman, Joshua Ong, Phani Paladugu, Molly Aldred, Ethan Waisberg, Andrew G. Lee, Alireza Tavakkoli, "Test-retest Reliability of Virtual Reality Devices in Quantifying for Relative Afferent Pupillary Defect", Translational Vision Science & Technology (Jounral 2023)

Prithul Sarker, Nasif Zaman, Alireza Tavakkoli, "VR-SFT: Reproducing Swinging Flashlight Test in Virtual Reality to Detect Relative Afferent Pupillary Defect", International Symposium on Visual Computing (Conference 2022)

Prithul Sarker, Joshua Ong, Nasif Zaman, Sharif Amit Kamran, Ethan Waisberg, Phani Paladugu, Andrew G. Lee, Alireza Tavakkoli "Extended Reality Quantification of Pupil Reactivity as a Non-invasive Assessment for the Pathogenesis of Spaceflight Associated Neuro-ocular Syndrome: A Technology Validation Study for Astronaut Health", Life Sciences in Space Research (Journal 2023)

Prithul Sarker, Khondker Fariha Hossain, Isayas Adhanom, Philip Pavilionis, Nicholas Murray, Alireza Tavakkoli, "Analysis of Smooth Pursuit Assessment in Virtual Reality and Concussion Detection using BiLSTM", International Symposium on Visual Computing (Conference 2022)

Prithul Sarker, Sushmita Sarker, George Bebis, Alireza Tavakkoli, "ConnectedUNets++: Mass Segmentation from Whole Mammographic Images", International Symposium on Visual Computing (Conference 2022)

Prithul Sarker, Joshua Ong, Nasif Zaman, Sharif Amit Kamran, Ethan Waisberg, Phani Paladugu, Andrew G. Lee, Alireza Tavakkoli, "Investigating the Pathogenesis of Spaceflight Associated Neuro-ocular Syndrome with Head-mounted Visualization Engineering of Pupil Reactivity" (Poster at North American Neuro-Ophthalmology Society- NANOS Annual Conference 2023)

Prithul Sarker, Alireza Tavakkoli, "An Arduino-based Lightweight and Reliable Solution to Detect Relative Afferent Pupillary Defect" (Poster at Optica Fall Vision Meeting 2022)

Ethan Waisberg, Joshua Ong, Mouayad Masalkhi, Sharif Amit Kamran, Nasif Zaman, **Prithul Sarker**, Andrew G Lee, Alireza Tavakkoli, "GPT-4: A New Era of Artificial Intelligence in Medicine", Irish Journal of Medical Science (2023)

Joshua Ong, Ethan Waisberg, Sharif Amit Kamran, Phani Paladugu, Nasif Zaman, **Prithul Sarker**, Alireza Tavakkoli, Andrew G. Lee, "Deep Learning Synthetic Angiograms for Individuals Unable to Undergo Contrast-guided Laser Treatment in Aggressive Retinopathy of Prematurity", Nature Eye (Journal 2023)

Nasif Zaman, **Prithul Sarker**, Alireza Tavakkoli, "Calibration of Head Mounted Displays for Vision Research with Virtual Reality", Jounral of Vision

Ethan Waisberg, Joshua Ong, Nasif Zaman, Sharif Amit Kamran, **Prithul Sarker**, Alireza Tavakkoli, Andrew G. Lee, "GPT-4 for Triaging Ophthalmic Symptoms", Nature Eye (Journal 2023)

Mouayad Masalkhi, Ethan Waisberg, Joshua Ong, Nasif Zaman, **Prithul Sarker**, Andrew G Lee, Alireza Tavakkoli, "Apple Vision Pro for Ophthalmology and Medicine", Annals of Biomedical Engineering (Journal 2023)

Ethan Waisberg, Joshua Ong, Mouayad Masalkhi, Nasif Zaman, **Prithul Sarker**, Andrew G Lee, Alireza Tavakkoli, "The Future of Ophthalmology and Vision Science with the Apple Vision Pro", Nature Eye (Journal 2023)

Ethan Waisberg, Joshua Ong, Mouayad Masalkhi, Nasif Zaman, Sharif Amit Kamran, **Prithul Sarker**, Alireza Tavakkoli, Andrew G Lee, "The Case for Expanding Visual Assessments During Spaceflight", Prehospital and Disaster Medicine (Journal 2023)

Ethan Waisberg, Joshua Ong, Sharif Amit Kamran, Nasif Zaman, Phani Paladugu, **Prithul Sarker**, Alireza Tavakkoli, Andrew G. Lee, "Further Characterizing the Physiological Process of Posterior Globe Flattening in Spaceflight Associated Neuro-ocular Syndrome with Generative Adversarial Networks", Journal of Applied Physiology (2023)

Ethan Waisberg, Joshua Ong, Mouayad Masalkhi, Nasif Zaman, Sharif Amit Kamran, **Prithul Sarker**, Andrew G. Lee, Alireza Tavakkoli, "Text-to-image Artificial Intelligence to Aid Clinicians in Perceiving Unique Neuro-ophthalmic Visual Phenomena", Irish Journal of Medical Science (2023)

Joshua Ong, Ethan Waisberg, Mouayad Masalkhi, Sharif Amit Kamran, Kemper Lowry, **Prithul Sarker**, Nasif Zaman, Phani Paladugu, Alireza Tavakkoli, Andrew G Lee, "Artificial Intelligence Frameworks to Detect and Investigate the Pathophysiology of Spaceflight Associated Neuro-Ocular Syndrome (SANS)", Brain Sciences (Jounral 2023)

Ethan Waisberg, Joshua Ong, Mouayad Masalkhi, Sharif Amit Kamran, Nasif Zaman, **Prithul Sarker**, Alireza Tavakkoli, Andrew G. Lee, "GPT-4 and Ophthalmology Operative Notes", Annals of Biomedical Engineering (Journal 2023)

Ethan Waisberg, Joshua Ong, Mouayad Masalkhi, Nasif Zaman, Sharif Amit Kamran, **Prithul Sarker**, Andrew G Lee, Alireza Tavakkoli, "Generative Pre-Trained Transformers (GPT) and Space Health: A Potential Frontier in Astronaut Health During Exploration Missions", Prehospital and Disaster Medicine (Journal 2023)

Ethan Waisberg, Joshua Ong, Mouayad Masalkhi, Nasif Zaman, **Prithul Sarker**, Andrew G Lee, Alireza Tavakkoli, "Apple Vision Pro and Why Extended Reality will Revolutionize the Future of Medicine", Irish Journal of Medical Science (2023)

Ethan Waisberg, Joshua Ong, Mouayad Masalkhi, Nasif Zaman, Sharif Amit Kamran, **Prithul Sarker**, Andrew G Lee, Alireza Tavakkoli, "ChatGPT and Medical Education: A New Frontier for Emerging Physicians", Canadian Medical Education Journal (2023)

Ethan Waisberg, Joshua Ong, Mouayad Masalkhi, Nasif Zaman, **Prithul Sarker**, Andrew G Lee, Alireza Tavakkoli, "Apple Vision Pro and The Advancement of Medical Education with Extended Reality", Canadian Medical Education Journal (2023)

Ethan Waisberg, Joshua Ong, Sharif Amit Kamran, Mouayad Masalkhi, Nasif Zaman, **Prithul Sarker**, Andrew G Lee, Alireza Tavakkoli, "Bridging Artificial Intelligence in Medicine with Generative Pre-trained Transformer (GPT) Technology", Journal of Medical Artificial Intelligence (2023)

Ethan Waisberg, Joshua Ong, Mouayad Masalkhi, Nasif Zaman, **Prithul Sarker**, Andrew G Lee, Alireza Tavakkoli, "Apple Vision Pro: The Future of Surgery with Advances in Virtual and Augmented Reality", Irish Journal of Medical Science (2023)

Ethan Waisberg, Joshua Ong, Nasif Zaman, Sharif Amit Kamran, **Prithul Sarker**, Alireza Tavakkoli, Andrew G Lee, "Extended Reality for Strabismus Screening in Developing Countries", Nature Eye (Journal 2023)

Ethan Waisberg, Joshua Ong, Mouayad Masalkhi, Nasif Zaman, Sharif Amit Kamran, **Prithul Sarker**, Alireza Tavakkoli, Andre G Lee, "Optical Coherence Tomography Analysis of International Space Station Astronauts", Investigative Ophthalmology & Visual Science (Abstract 2023)

Ethan Waisberg, Joshua Ong, Mouayad Masalkhi, Nasif Zaman, **Prithul Sarker**, Andrew G Lee, Alireza Tavakkoli, "Google's AI chatbot "Bard": A Side-by-side Comparison with ChatGPT and Its Utilization in Ophthalmology", Nature Eye (Journal 2023)

Alex Suh, Joshua Ong, Sharif Amit Kamran, Ethan Waisberg, Phani Paladugu, Nasif Zaman, **Prithul Sarker**, Alireza Tavakkoli, Andrew G Lee, "Retina Oculomics in Neurodegenerative Disease", Annals of Biomedical Engineering (Journal 2023)

Ethan Waisberg, Joshua Ong, Mouayad Masalkhi, Nasif Zaman, **Prithul Sarker**, Andrew G Lee, Alireza Tavakkoli, "GPT-4 to Document Ophthalmic Post-operative Complications", Nature Eye (Journal 2023)

Khondker Fariha Hossain, Sharif Amit Kamran, **Prithul Sarker**, Philip Pavilionis, Isayas Adhanom, Nicholas Murray, Alireza Tavakkoli, "Virtual-Reality based Vestibular Ocular Motor Screening for Concussion detection using Machine-learning", International Symposium on Visual Computing (Conference 2022)

Awards & Certifications

NSF National Innovation Corps (I-Corps™) program July 2022 – Sep. 2022
Entrepreneurial Training Program (Seven weeks) ($50,000 Awarded) *New York City, NY*

Undergraduate Student Merit Scholarship Feb. 2013 – Sep. 2017
Bangladesh University of Engineering and Technology *Dhaka, Bangladesh*

Undergraduate Thesis

Statistical Modeling of Effluent Generated from Proposed Rampal Power Plant for Environmental Impact Assessment
Oct. 2016 – Sep. 2017

- The primary objective of the thesis was to ensure less emission of SOx and NOx compared to subcritical and supercritical technologies.
- Analyzed and interpreted the direction of wind of that locality to ensure the prevention of the mangrove forest from the power plant generated SOx and NOx emissions.