Savinay Nagendra

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Education

Pennsylvania State University, University Park Campus — *State College, PA*

- Ph.D. in Computer Science and Engineering (GPA: 3.6*/4.0) — *Aug 2019 - Present*
- Master of Science in Electrical and Computer Engineering (GPA: 3.7/4) — *Aug 2017 – May 2019*

PES Institute of Technology, Bangalore — *Karnataka, India*

Bachelor of Engineering in Electrical and Electronics (GPA: 3.91/4) — *Aug 2013 – May 2017*

Professional Experience

Pennsylvania State University – Center for Machine Learning and Applications (CMLA) — *State College, PA*

Research Assistant | Computer Vision | Deep Learning | PyTorch | Technical Lead | Google AI for Social Good — *Aug 2019 - Present*

- Developed a continual deep-learning framework for semi-automated segmentation of global landslides from satellite imagery showing a 14% improvement in performance over current state-of-the-art methods. (paper link)
- Designed a memory-efficient auxiliary deep-learning framework to refine the outputs of existing state-of-the-art segmentation networks, showing consistent performance improvement in segmentation and saliency detection tasks by 5%. (paper link)

Schlumberger Doll Research – Department of Automated Geology — *Cambridge, MA*

Research Scientist Intern | 3D Semantic Inpainting | MoCoGan | PyTorch — *April 2021 – Aug 2021*

- Developed a 3D semantic inpainting deep learning framework using MoCoGan to generate high-quality, realistic 3D simulations of reservoirs with 10x improvement in FPS.

Pennsylvania State University – Lab for Perception, Action, and Cognition (LPAC) — *State College, PA*

Research Assistant | Gait Stability Analysis | Computer Vision | Deep Learning | Tensorflow — *Apr 2018 – May 2019*

- Developed an end-to-end deep learning framework to transform kinematics (video of human action) to dynamics (foot pressure heat map) to extract the trajectory of the center of pressure for gait stability analysis. (paper link)

Schlumberger Doll Research – Department of Machine Learning — *Cambridge, MA*

Research Scientist Intern | Reinforcement Learning | Keras | PyTorch | C++ — *May 2018 – Aug 2018*

- Designed a rapid, scalable, and search-efficient deep reinforcement learning framework to learn an optimal policy for valve settings of multi-lateral oil wells to maximize the Net Present Value (NPV).

University of Southern California – Computational Learning and Motor Control Lab (CLMC) — *Los Angeles, CA*

Research Intern | Trajectory Planning | Obstacle Avoidance | Inverse Kinematics | MATLAB | C++ — *May 2016 – Aug 2016*

- Designed a framework for jerk-less point-to-point trajectory planning with dynamic obstacle avoidance for humanoid end-effectors.

Skill Set

Languages: Python, C++, C, MATLAB, JavaScript
Frameworks: PyTorch, Tensorflow, Keras, Ajax, jQuery, NodeJS, Git, Docker, Flask, SQL Alchemy
Cloud computing services: Google Cloud, AWS, Azure
Soft Skills: Problem-Solving, Work ethics, Verbal and written communication, Time Management, Teamwork, Flexibility, Creativity

Publications and Patents

- *"ThreshNet: Segmentation Refinement Inspired by Region-Specific Thresholding."*, *IEEE* Conference on Computer Vision and Pattern Recognition (CVPR) 2023. (preprint)
- *"Constructing a Large-Scale Landslide Database Across Heterogeneous Environments Using Task-Specific Model Updates."*, IEEE Journal of Selected Topics in Applied Earth and Observations and Remote Sensing (JSTARS), Vol. 15, 2022. (paper link)
- *"A rapid and realistic 3D stratigraphic model generator conditioned on reference well log data."*, European Association of Geoscientists and Engineers (EAGE) 2021. (preprint)
- "Utilizing an interactive AI-empowered web portal for landslide labeling for establishing a landslide database in Washington state, USA.", European Geophysical Union (EGU) 2021. (paper link)
- *"Learning Dynamics from Kinematics: Estimating 2D Foot Pressure Maps from Video Frames."*, European Conference on Computer Vision (ECCV) 2020. (paper link)
- *"Cloud-based interactive database management suite integrated with deep learning-based annotation tool for landslide mapping."*, American Geophysical Union (AGU) 2020. (paper link)
- *"Comparison of Reinforcement Learning algorithms applied to the cart-pole problem."*, International Conference in Computing, Communications, and Informatics (ICACCI) 2017. (paper link)
- Co-Inventor and a patent filed by Schlumberger: "*Oil Field Asset Optimization using Reinforcement Learning Controllers*."

Technical Projects

- **AudioHUD**, *Penn State (Second place, Nittany AI Challenge Prototype Phase 2022)* — *Python, JavaScript, HTML, CSS, PHP*
  AI-based Heads-Up Display designed for the DHH community to enhance situational awareness in virtual and real-world environments by providing visual substitutes to sound cues.
- **Behavioral Cloning for Self-Driving Cars**, *Penn State* — *Python, Keras, Tensorflow, OpenCV*
  An end-to-end CNN framework to predict steering angles from the corresponding left, right, and center video frames from the Udacity dataset.
- **Emotion Recognition from the perspective of Action Recognition**, *Penn State* — *Python, PyTorch, OpenCV*
  An end-to-end pipeline to detect arousal and valence from videos of facial landmarks and body pose and extracted optical flow.