Ashwin Sakhare

Data Scientist | https://arsakhar.github.io

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Professional Summary

Data scientist with a strong neuroimaging background and 5+ years of experience in image processing, software development, statistical analysis of clinical data, and working in a collaborative environment.

Education

University of Southern California — Los Angeles, CA
Doctor of Philosophy in Biomedical Engineering — Aug. 2015-Apr. 2021

University of Southern California — Los Angeles, CA
Master of Science in Biomedical Engineering — Aug. 2015-May 2017

North Carolina State University — Raleigh, NC
Bachelor of Science in Biomedical Engineering — Aug. 2005-Dec. 2009

Relevant Coursework

Applied Statistical Data Analysis – application of regression models to real-world data
Machine Learning for Data Science – introduction to decision trees, dimensionality reduction, clustering, regularization, hidden Markov models, and neural networks

Technical Skills

- **Programming Languages:** C#, Python
- **Python Packages:** NumPy, Torch, PyQt5, Pandas, Scikit-learn
- **Statistical Software:** SPSS, SAS
- **Game Engines:** Unity3D
- **CAD Software:** SolidWorks

Projects

Deep Learning in MRI — Feb. 2020-Jul. 2020
- Created a pre-processing pipeline to extract and label meningioma slices from 3D MRI volumes.
- Implemented a convolutional neural network (CNN) for predicting meningioma consistency (grade 0-3) on preoperative MRI scans acquired on 82 patients.

MRI Image Processing Software — Apr. 2020-Oct. 2020
- Built a desktop application allowing scientists and clinicians to load an MRI and visualize 15+ cerebral flow measurements associated with brain health.
- Developed an image processing algorithm for manually segmenting anatomical regions of interest (ROI); created an interactive GUI for plotting flow measurements from 5+ ROI's simultaneously.

Health and Fitness Monitoring Software — Jul. 2020-Nov. 2020
- Built a desktop application supporting real-time visualization of health and fitness data broadcast from over 900 compatible devices within ANT+ ecosystem.
- Created an interactive GUI for displaying and exporting data from up to 8 devices simultaneously.

Virtual Reality Games for Brain Health — Apr. 2017-Present
- Programmed gameplay and game mechanics for 9 environments across 3 virtual reality (VR) games.
- Developed registration/login system; built backend SQL database for querying and storing game data.
- Programmed real-time serial and UDP data communication between game and 4 hardware peripherals.
- Led 3 engineers to build a custom, stationary exercise bike interfacing as a character controller in VR.
- Supervised a cross-functional team of 10 engineers, technical artists, and neuroscientists.

Research Experience

PhD Researcher — Aug. 2015-Present
Stevens Neuroimaging and Informatics Institute — *Los Angeles, CA*
- Conducting a 2-year clinical trial assessing impact of cognitive stimulation and exercise in VR on brain health in older adults at risk for Alzheimer's disease.
- Utilizing multi-modal MRI imaging techniques to detect early neural dysfunction in older adults.

Work Experience

Systems Engineer Jul. 2011-Jun. 2015
LipoScience *Raleigh, NC*

- Managed design changes to Vantera, an FDA-cleared clinical blood analyzer, reducing downtime and improving sample throughput.

Leadership and Involvement

USC Street Dance Society Breakdancer Aug. 2015-Jul. 2016
SMART-VR Student Ambassador Nov. 2020-Present

Publications

Stradford J.; Sakhare AR., Ravichandran R., Schroeder T., Michener L., Pa J., *Conducting a VR Clinical Trial in the Era of COVID-19. (Submitted)*

Sakhare AR.; Barisano G., Pa J., *Assessing test-retest reliability of phase contrast MRI for measuring cerebrospinal and cerebral blood flow dynamics*. Magn Reson Med. 2019; 82:658–670.

Sakhare AR.; Yang V., Stradford J., Tsang I., Ravichandran R., Pa J., *Cycling and Spatial Navigation in an Enriched, Immersive 3D Virtual Park Environment: A Feasibility Study in Younger and Older Adults*. Front. Aging Neurosci. 2019; 218.