VIVEK SAHUKAR

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SUMMARY

- Currently pursuing Ph.D. in Data Science, Analytics & Engineering **(Fulton Fellow)** at Arizona State University.
- Data Scientist with Deep Learning & Robotics specialization with 10+ years of experience in business analytics, machine learning, computer vision, robotics, statistical modeling, cloud computing, research, strategy, & entrepreneurship.
- Graduated with MS in Data Science, Duke University (Class of 2020).

EDUCATION

Ph.D., Data Science, Analytics & Engineering, *Aug 2023 - Present*
Arizona State University, USA

Master in Intedisciplinary Data Science, *Aug 2018 - May 2020*
Duke University, USA

Post Graduate Diploma in Management, *Apr 2015 - Mar 2016*
Indian Institute of Management (IIM), Lucknow, India

Bachelor of Technology, Agricultural Engineering *Aug 2005 - Jun 2009*
Govind Ballabh Pant University of Agriculture & Technology, India

PRESENTATIONS

Safe Reinforcement Learning in Drone Navigation
Presented the poster (Authors: Vivek Sahukar, Dr. Lindsay Sanneman) in Arizona State University Southwest Robotics Symposium (SWRS) in Nov 2024. This work resulted from the final project (report) in Summer School in AI Alignment, organized by BlueDot Impact Foundation in UK, which I attended remotely for 12 weeks in Summer 2024.

Wiggins, W., **Sahukar, V.**, Banerjee I., Lungren M., Mazurowski M., Amrhein T., "A Deep Learning Model for Classifying Spontaneous Intracranial Hypotension on MRI", Paper presented at: Radiological Society of North America Conference; Dec 2021; Chicago, IL, USA.

EXPERIENCE

Research & Teaching Associate, Arizona State University, Tempe, AZ, USA *Aug 2023 - Present*
- **Currently advised by Dr. Lindsay Sanneman, and working on policy steering for robotics.**
- Awarded **Fulton Fellowship** by Arizona State University (ASU) in recognition of academic accomplishments, which provides funding commitment for four academic years in the form of Graduate Research Associate appointment.
- Finished coursework requirements and passed qualifying exam for the PhD Data Science Program in Summer 2025.
- Working as a TA for AI/ML courses, where I assist instructors in grading, addressing student queries, and conducting the classes in the professor's absence.

AI Researcher, UNC Blue Sky Innovations, UNC Chapel Hill, NC, USA *Mar 2022 - Jun 2023*
- Worked on making the robotic arm do tasks autonomously; Used OpenCV & deep learning-based object detection models to recognize & pick the object in the camera scene; Then used MoveIt & ROS for path planning. Also, used the NVIDIA Isaac Sim platform to make the robot learn to do complex tasks using reinforcement learning.
- Mentored a sophomore student working at the lab in deep learning and robotics
- Attended meetup events and gave presentations about my research work for lab promotion; Networked with relevant industry professionals for potential future collaborations.

Data Scientist Computer Vision, Infinite Acres (owned by 80 Acres Farms) *Aug 2021 - Feb 2022*
- Used a labeling tool in Azure ML Studio to allow growers to label images and create a labeled dataset for model training.
- Built & deployed a deep learning model using Azure Databricks for multi-label classification of disease symptoms in plant images; this would enable scientists to detect diseases early and take preventive action thus increasing final yield.
- Applied computer vision methods to extract plant phenotypes such as leaf area, size from plant images.
- Made PowerBI reports that show plant images and plant phenotypes that helps scientists to monitor plant growth.

Associate in Research, Department of Radiology, Duke Health, USA *Nov 2020 - Aug 2021*
- Built a deep learning model based on Resnet-50 architecture & pre-trained on ImageNet to identify symptoms of Spontaneous Intracranial Hypotension in human brain MRI scans; Wrote custom code in Pytorch & fast.ai libraries.
- Employed data augmentation techniques, focal loss, & oversampling to handle class imbalance.
- Used ensemble of models for series & study level predictions; Model is well suited for general use which would be deployed after external validation on data from external collaborator & prospective clinical evaluation.
- Did data pre-processing of MRI Scan images in DICOM format by using Pydicom, OpenCV & scikit-image.
- Presented paper (out of this project) as the 2nd co-author in RSNA conference at Chicago in Dec 2021.

Data Scientist, Duke River Center, Nicholas School of Environment, Duke University, USA *May 2019 - Aug 2019*
- Used Python libraries to impute missing values in real-time data from river stream sensors for enabling model testing.
- Studied outliers & anomalies by applying statistical & unsupervised learning algorithms to understand inconsistencies.
- Guided team of 2 members by conducting live coding sessions, enabling them to use Python machine learning libraries.

Research Data Associate, Indian Institute of Management, Lucknow, India *Oct 2017 - Jul 2018*
- Analyzed electoral & financial data to study how the financial performance of companies is affected by political ties.
- Employed web scraping, fuzzy matching & data wrangling tools in Python for data collection & analysis.

Computer Vision Consultant, Constems-AI Systems Private Limited, Delhi-NCR, India *Jul 2017 - Oct 2017*
- Developed facial recognition system by using OpenCV & CNN to implement automatic attendance in institutions.
- Designed vehicle detection system by using YOLO & R-CNN for object detection to match vehicle with driver's face.
- Tracked customer traffic in retail store by applying deep learning based solutions to increase customer footprint.

General Manager - Operations, Fincare Small Finance Bank, Bengaluru, India *Mar 2016 - May 2017*
- Developed a risk model by utilizing financial & operations data to implement preventive measures.
- Employed business analytics by using MIS tools to optimize operations & improve customer satisfaction.
- Conducted data-driven market analysis for design & launch of new banking products & promotional campaigns.

Financial Analyst, Oriental Bank of Commerce, Delhi, India *Aug 2009 - Mar 2015*
- Applied financial analytics by using Business Intelligence tools to diversify & grow loans portfolio by 200%.
- Availed data mining techniques for increasing workflow efficiency & managing a team of 50+ people.
- Employed social network analysis for recovery management & maintaining customer relationships.

PROJECTS

Data Science Project Manager - Bass Connections, Energy Data Analytics Lab, Duke University, USA
- Managed team of 7 Duke undergraduates using Kanban to ensure accurate & timely submission of deliverables.
- Detected energy infrastructure in satellite images with 75% accuracy by using U-Net for semantic segmentation.
- Used dimensionality reduction techniques viz. PCA, t-SNE to understand how the model interprets the images.
- Created & integrated synthetic images into model training process for increasing test accuracy & model generalizability.

Duke Master Capstone Project - Conservation International, Virginia, USA
- Did causal inference analysis by using Logistic & Poisson regression to analyze effect of covariates on outcome variable.
- Extracted geospatial data in form of raster images by using GeoPandas to convert into tabular data frame for analysis.
- Balanced treatment & control groups using propensity score matching & clustering to replicate randomized experiment.

SKILLS

Languages: Python, C++, R, SQL, HTML, XML
Machine Learning: scikit-learn, NumPy
Deep Learning: Pytorch, Keras, Tensorflow
Reinforcement Learning: OpenAI Gym, Stable Baselines 3, HuggingFace
Robotics: ROS1/2, Gazebo, RViz, MoveIt, NVIDIA Isaac Sim
Computer Vision: OpenCV, sciki-image, SciPy, Intel RealSense
Linux: Ubuntu (preferred distribution), Command Line Tools, Git, VS Code
Data Wrangling & Analysis: Pandas, TidyVerse, Jupyter, VSCode, Excel
Data Visualization: matplotlib, seaborn, plotnine, ggplot, Tableau, PowerBI, LaTeX, Markdown
Cloud Technologies: Azure ML, Databricks, GPU training on private cloud servers
Professional: Project Management; Product Management; Networking & Customer Relationship; Team Leadership & Mentoring; Teamwork & Collaboration; Finance & Valuation

MODELS & ALGORITHMS

- **Statistics**: Regression, Hypothesis Testing, ANOVA, Hierarchical Modeling, A/B Testing
- **Machine Learning**: Decision Trees, Clustering, Bagging, Boosting, SVM, PCA
- **Deep Learning**: CNN, RNN, LSTM, GRU, GAN, Transformer Models
- **Reinforcement Learning**: DQN, A2C, PPO, DDPG

ACADEMIC SERVICE

- Served on the reviewer committee for the AAAI 2024 and 2025 AI Alignment Track.
- Mentored a sophomore CS student at UNC Blue Sky Lab, creating a personalized training plan in ML and data science, leading to the development of a custom object detection model and robotic arm interface over two semesters.
- Co-organizer for Deep Learning RTP Meetup; hosted events, gave talks, and promoted STEM education through lab outreach and community engagement.

LANGUAGES

- English (Proficient), Hindi (Native), French (Beginner)

HOBBIES & INTERESTS

Strength Training, HIIT, Tennis, Yoga, Running, Meditation, Hiking, Traveling, Stand-up Comedy, Cooking, Salsa dancing