Pranav Manjunath

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Rhodes Graduate Fellowship Awardee

PhD candidate passionate about transforming multi-modal data into insights, provide innovative solutions to complex real-world healthcare problems, build productive cross functional collaborations and lead by example.

Education

PhD in Biomedical Engineering — Aug 2022 – Present
Duke University (Advisor: Dr. Timothy Dunn) — *Durham, NC*

MS in Interdisciplinary Data Science (GPA: 3.95) — Aug 2020 – May 2022
Duke University — *Durham, NC*

BE in Computer Science and Engineering (Certificate of Distinction) — Aug 2016 – May 2020
Visvesvaraya Technological University (PESIT) — *Bangalore, India*

Experience

Co-leader - Discovering AI Applications for Traumatic Brain Injury Care — Aug 2024 – Present
Duke University — *Durham, NC*

- Co-initiated and leading the Bass Connections project, securing over **$30,000 in competitive funding** to conduct the largest qualitative/mixed-methods research study focused on identifying AI-driven opportunities to improve TBI care at Duke. *Project Website*
- Collaborated with senior faculty across multiple departments to design and teach the project-based course to an interdisciplinary team of over 20 students.
- Awarded the **Rhodes Graduate Fellowship for Interdisciplinary Research** for spearheading this project

Co-leader - Graduate School Committee: DukeREP — May 2023 – Present
Duke University — *Durham, NC*

- Outreach program aiming increase diversity in STEM fields by encouraging high-school students to pursue academic and professional careers in STEM
- Spearheaded efforts to recruit mentors and instructors within the PhD program to support and guide high school students through teaching and mentoring initiatives.

Health AI Researcher - +DS Program — May 2021 – May 2022
Duke University — *Durham, NC*

- Worked with Prof. Michael Pencina, Prof. Ricardo Henao and a team of Duke researchers on a NIH grant project to build a stroke survival predictive model.

Capstone Researcher - ViacomCBS/MTV — Aug 2021 – May 2022
Duke University — *Durham, NC*

- Worked with MTV to find solutions to increase the voter turnout rates amongst youth in the US elections using geospatial data. Tested a hypothesis that proximity of polling location to universities has an inverse correlation with the student voter turnout rate.
- Won **Silver Distinction at Anthem Awards 2023** under the category Awareness Media (for profit).
- Project Findings and Insights featured in *Business Wire* and *USA Today* - helping MTV to start social campaigns to improve student voter access.

Co President - Duke Interdisciplinary Product Management Club — May 2021 – May 2022
Duke University — *Durham, NC*

- Co-founder of a club at Duke to bridge Product Management, Data Science, and Machine Learning. Main responsibilities: Organize technical workshops, seminars, datathons, producthons, strategic case competitions

Project Manager - Data+ — May 2021 – Aug 2021
Duke University — *Durham, NC*

- Managed a team of Duke undergraduate students to develop machine learning features that can be used to identify unknown web attacks.
- Outcome incorporated into Duke's IT security infrastructure to help protect the network.

Data Scientist Summer Intern May 2021 – Aug 2021
Advance Auto Parts *Raleigh, NC*

- Clustering and topic modelling customer product reviews into key themes utilizing NLP unsupervised algorithms. Used by business leaders to address customer pain points and trends
- Feature engineered product, customer, location and vehicle data from various sources leveraging SQL and Python
- Presented results and recommendations to stakeholders, company technical interest group and C-suite executives.

Graduate Teaching Assistant Dec 2020 – Present
Duke University *Durham, NC*

- **Introduction to Data Science - Dr. Timothy Dunn**: Organize weekly office hours to review and teach course material and grade student assignments.
- **Design Health 3 - Dr. Eric Richardson, Dr. Paul Fearis, Dr. Joseph Knight**: Organize, create optimal class schedules templates and provide feedback and grade students on their presentations.
- **Programming for Data Analytics (Fuqua School of Business) - Prof. Brian Cozzi**: Organize weekly office hours to help students with coursework and teach them concepts in Python and R programming.
- **Data Engineering in the Cloud - Prof. Noah Gift**: Help structure the course, grade and review assignments, organize office hours to help students with the coursework.
- **Introduction to Machine Learning - Prof. Kyle Bradbury**: Help grade and review assignments, organize office hours to help students with the coursework.
- **Data Analytics and Applications (Fuqua School of Business) - Prof. Mattia Ciollaro**: Organize weekly office hours to help students with coursework and teach them concepts in Machine Learning.
- **Cloud Computing for Data Analysis - Prof. Noah Gift**: Help structure the course, grade and review assignments, organize office hours to help students with the coursework.
- **Python Winter Course and MIDS Bootcamp - Prof. Andrew Hilton and Prof. Genevieve Lipp**: Organize office hours for students to help teach them Python programming.

Publications / Conferences

IEEE- Biomedical Health Informatics (in Review) 2025
Pranav Manjunath & Brian Lerner & Timothy Dunn
Title: **Personalized Case- and Evidence-Based TBI Prognosis with Small Language Models**

IEEE-Biomedical Health Informatics (in Review) 2025
Brian Lerner & Pranav Manjunath & Timothy Dunn
Title: **Shortcut Checks for Saliency Maps**

IEEE-Journal of Biomedical Health Informatics (in Review) 2025
Pranav Manjunath & Brian Lerner & Timothy Dunn
Title: **Trust Your Neighbors: Multimodal Patient Retrieval for TBI Prognosis**

Artifical Intelligence in Medicine (AIME 2024) - Main Conference Presentation July 2024
Pranav Manjunath & Brian Lerner & Timothy Dunn
Title: **Towards Interactive and Interpretable Image Retrieval-Based Diagnosis: Enhancing Brain Tumor Classification with LLM Explanations and Latent Structure Preservation *(Best Student Paper Award)*** - Paper Link

Orthopedic Trauma Association (OTA 2024) - Podium Presentation Oct 2024
J. Helmkamp, P. Manjunath, B. Valan, P. Raghuvanshi, M. Izzi, T. Dunn, Seyler
Title: **Personalizing Total Knee Arthroplasty: A Deep Learning Approach to Restoring Natural Alignment with Anatomic Key-point Identification**

Duke AI Health Annual Conference - Poster Presentation Dec 2023
Pranav Manjunath & Brian Lerner & Timothy Dunn
Poster 1: **AI - Content Based Image Retrieval (AI-CBIR) to Guide Brain Tumor Diagnosis**
Poster 2: **VNA to Z: Automated Pipeline for Retrieving and Processing Duke Health CT Scans**

Springer Publications - Book Chapter in Algorithms for Intelligent Systems Aug 2019

Pranav Manjunath & Kushal Naidu

Title: **Apriori Algorithm and Decision Tree Classification Methods to Mine Educational Data for Evaluating Graduate Admissions to US Universities** - Paper Link

International Journal of Scientific Research in Science and Technology May 2018

Pranav Manjunath & Nimisha V Arun

Title: **EyesPro - Protect your Eyes *(Best Paper Award)*** - Paper Link

Projects

Facial Detection and Emotion Classifier - Computer Vision Project Jan - May 2022

- Developed a Deep Learning model to detect and predict facial emotions, with insights into the most impactful facial regions for emotion recognition.

Breast Cancer Image Classification - Computer Vision Project Aug - Dec 2021

- Identified Data augmentation on Breast Cancer images to improve Deep Learning model performance

Painting Classification - Computer Vision Project Jan - May 2021

- Used CNN-XG Boost Model to classify and predict paintings into its respective genre and artist

Small World Experiment - Reinforcement Learning Project Jan - May 2021

- Trained a Q-Learning Model to determine the shortest connectivity between two unknown individuals

Facebook Promotional Strategy - AB Testing Jan - May 2021

- Designed, Implemented, and Analyzed Music Promotional Ads on Facebook

Real Time Prediction of Stock Prices using Time Series Modelling (AWS) Aug - Dec 2020

- Created a Dash Application hosted on AWS that Predicts Stock Prices through ARIMA

Prediction of Genre based on Spotify Musical Features Aug - Dec 2020

- Built an R-Shiny Application that predicts the genre of a song and display similar songs through similarity matching

BERT - Multi Emotion Classification of Social Media Comments Aug - Dec 2020

- Built a Python Application that can predict and display the emotion of Social Media Comments

PlaceMeUp - Job Placement ML Prediction Platform Aug 2019 - May 2020

- Built a Supervised ML Pipeline that can be used to predict potential job opportunities for undergraduate students based on their profiles.

EyesPRO - Protect Your Eyes Jan - May 2018

- Android Mobile Application to help reduce myopia in children. Converted into a research paper and won the **Best Paper Award** at RISE Conference 2018.

Skills

Programming Languages: Python, R, SQL (MySQL and Postgres), C++

Cloud Services: AWS Machine Learning Certified, Google Cloud Platform

Extra Curricular Activities

Professional Violinist and Music Teacher

Trained in Indian Classical Carnatic Music

Co-founded Boston Brothers, an Indian classical and fusion violin band. Collaborated with international musicians, performed over 600 concerts worldwide, and have received multiple awards, honors and citations.

Secured 1st Rank in Vidwath, the highest Indian classical Carnatic music examination

Taught 25 students at a music academy in India and continues to conduct classes for several students in the US.

Contribute part of my earnings to charity, to support the education of poor students. I have performed for several fund-raising concerts to support local artists during the COVID-19 pandemic. As a band we have played in old age homes, charities, orphanages, to help spread the joy of music.

Sports

Swimming | Cricket

Won several trophies and medals at District Level Swimming, Boston USA and played for Mallya Aditi International School's Cricket Team (High School) for 4 years.