

# Pranav Manjunath

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**Rhodes Graduate Fellowship Awardee**

PhD Candidate passionate about transforming data into insights, provide innovative solutions to solve complex real-world healthcare problems, build productive collaborations and lead by example.

## EDUCATION

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<b>PhD in Biomedical Engineering</b> <i>Duke University (Advisor: Dr. Timothy Dunn)</i>	Aug 2022 – Present <i>Durham, NC</i>
<b>MS in Interdisciplinary Data Science (GPA: 3.953)</b> <i>Duke University</i>	Aug 2020 – May 2022 <i>Durham, NC</i>
<b>BE in Computer Science and Engineering (Certificate of Distinction)</b> <i>Visvesvaraya Technological University (PESIT)</i>	Aug 2016 – May 2020 <i>Bangalore, India</i>

## EXPERIENCE

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<b>Co-leader - Discovering AI Applications for Traumatic Brain Injury (TBI) Care</b> <i>Duke University</i>	Aug 2024 – Present <i>Durham, NC</i>
<ul style="list-style-type: none"><li>Leading this Bass Connections project that is <b>funded over \$30,000</b> to conduct the largest qualitative/mixed-methods research study aimed at identifying AI-driven opportunities to enhance TBI care. <i>Project Website</i></li><li>This project aims to understand the landscape of TBI care management, clinical AI perceptions, and developing + deploying human-centered clinical AI tools</li><li>Leading a team of over 20 students from diverse backgrounds with a highly respected leadership team from various departments such as BME, ECE, Biostat, Neurology, Neurosurgery, Psychiatrics, Nursing and Social Sciences.</li><li>Awarded the <b>Rhodes Graduate Fellowship for Interdisciplinary Research</b> for spearheading this project</li></ul>	
<b>Capstone Researcher - ViacomCBS/MTV</b> <i>Duke University</i>	Aug 2021 – May 2022 <i>Durham, NC</i>
<ul style="list-style-type: none"><li>Working with MTV to find solutions to increase the voter turnout rates amongst youth in the US elections. Specifically, testing a hypothesis that proximity of polling location to universities has an inverse correlation with the student voter turnout rate.</li><li>Won <b>Silver Distinction at Anthem Awards 2023</b> under the category Awareness Media (for profit).</li><li>Project Findings and Insights featured in <i>Business Wire</i> and <i>USA Today</i> - helping MTV to start social campaigns to improve student voter access.</li></ul>	
<b>Health AI Researcher - +DS Program</b> <i>Duke University</i>	May 2021 – May 2022 <i>Durham, NC</i>
<ul style="list-style-type: none"><li>Working 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.</li></ul>	
<b>Co President - Duke Interdisciplinary Product Management Club</b> <i>Duke University</i>	May 2021 – May 2022 <i>Durham, NC</i>
<ul style="list-style-type: none"><li>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</li></ul>	
<b>Project Manager - Data+</b> <i>Duke University</i>	May 2021 – Aug 2021 <i>Durham, NC</i>
<ul style="list-style-type: none"><li>Managed a team of Duke undergraduate students to develop machine learning features that can be used to identify unknown web attacks.</li><li>Outcome incorporated into Duke's IT security infrastructure to help protect the network.</li></ul>	
<b>Data Scientist Summer Intern</b> <i>Advance Auto Parts</i>	May 2021 – Aug 2021 <i>Raleigh, NC</i>
<ul style="list-style-type: none"><li>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</li></ul>	

- 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 executive.

## Graduate Teaching Assistant

Dec 2020 – Present

*Duke University*

*Durham, NC*

- **Introduction to Data Science - Dr. Timothy Dunn:** Organize weekly office hours and grade student assignments
- **Design Health 3 - Dr. Eric Richardson, Dr. Paul Fearis, Dr. Joseph Knight:** Organize, create optimal class schedules templates and help 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.

## Machine Learning Intern

Jan 2020 – Mar 2020

*Microland Limited*

*Bangalore, India*

- Worked on implementing NLP techniques to effectively cluster in-house generated tickets with appropriate topic modeling (Python).
- Used HTM to identify anomalies in server data (Python).

## Trainee Decision Scientist Intern

Jan 2019 – Apr 2019

*Mu Sigma*

*Bangalore, India*

- Worked collaboratively on a project with a multinational pharmaceutical client in developing a plug and play analytical and statistical platform to implement data pre-processing and regularized regression models. The platform was built on R and R Shiny.

## PUBLICATIONS / CONFERENCES

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### Artificial 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. Izz, 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*

Title: **AI - Content Based Image Retrieval (AI-CBIR) to Guide Brain Tumor Diagnosis**

### 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

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- Facial Detection and Emotion Classifier - Computer Vision Project** Jan - May 2022
- Built a Deep Learning based model that can detect and predict the facial emotion in an image.
- 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 Undergraduate student jobs based on their scores
- 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

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

**Cloud Services:** AWS Machine Learning Certified, Google Cloud Platform

**Leadership:** Co-Founder of CARE - Career Counselling Services, aiming to guide undergraduate students for Job Placements and Higher Studies (currently over 320 members).

Co - Founder of an internationally acclaimed violin duet band with my brother, Boston Brothers.

Was in the organizing committee of TEDxPESITBSC, international conferences, cultural, and music programs in PESIT.

## EXTRA CURRICULAR ACTIVITIES

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### **Professional Violinist and Music Teacher**

*Trained in Indian Classical Carnatic Music*

Music is my passion and has taught me discipline, hard work, perseverance, time and people management, teamwork, creative thinking and leadership skills. It has provided me an opportunity to travel and perform across the world, meeting diverse people and learning various cultures and traditions. Teaching has taught me communication skills, how to simplify complex ideas and to be patient.

Performed over 500 concerts worldwide and have received multiple awards, honors and citations.

Received the 1st Rank in the highest Indian Classical Music Examination - Vidwath

**Boston Brothers** - an Indian classical and fusion band that I formed with my brother, collaborating with international musicians.

Taught 25 students at a music academy in Bangalore and continues to conduct online classes for several students.

Contribute part of my earnings to charity, to support the education of poor students. I have performed for several fund-raising concerts in the last two years 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.