Raghav Prasad

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EDUCATION

UNIVERSITY OF CALIFORNIA, SAN DIEGO
M.S (Computer Science) ◆ September 2021 - June 2023 ◆ CA, USA

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI (BITS)
Bachelor of Engineering (Computer Science) ◆ 2017 - 2021 ◆ Goa, India
GPA: 9.37/10.00

EXPERIENCE

RESEARCH INTERN | W.M. Keck Centre for Neurophysics, UCLA
May 2020 - Present ◆ CA, USA ◆ Supervisor: Dr. Mayank Mehta

Worked on making the next generation of a **multimodal virtual reality system for small animals**

- Used Unity game engine to replace older graphics engine and optimized performance
- Used new computer vision based fictive path tracking algorithm to replace older optic mice based system to track the motion of the animals
- Leveraged various open-source libraries and packages to add new features such as custom 3D model mazes and video cues
- Integrated the VR system with a Neuralynx brain data acquisition system and an IoT reward delivery system using Arduino
- Currently working on implementing computer vision based eye-tracking to replace current LED head tracking solution

RESEARCH INTERN | Cognitive Neuroscience Lab, BITS
September 2019 - Present ◆ Goa, India ◆ Supervisor: Dr. Veeky Baths

Graph Theoretical Analysis of PET imaging data to study Alzheimer's Disease progression

- Used a public neuroimaging dataset to obtain a large number of PET images over different tracers, ages and stages of AD
- Created an end-to-end pipeline using Python, R and shell scripts to preprocess, construct beta-amyloid plaque networks using partial correlations between signal strength values of the brain regions, and analyze those networks with respect to various graph metrics, in particular, percolation centrality
- Utilized multiprocessing and used a proven, data-driven thresholding scheme based on Orthogonal Minimum Spanning Trees to threshold the constructed networks in order to make the pipeline highly optimized and time-efficient

Understanding patterns in event-related potentials observed during psychological assessments

- Data was collected using a 32 channel Geodesic EEG monitoring and amplification system from 30 subjects answering the Depression, Anxiety and Stress (DASS21) psychological assessment
- The EEG recordings were analyzed for patterns in the ERPs
- Built graphs and performed a correlation study between basic centrality values and depression, anxiety, and stress scores, to observe the more relevant nodes responsible for these mental disorders

SOFTWARE DEVELOPMENT INTERN | Gnowledge Lab, Homi Bhabha Centre for Science Education
May - July 2019 ◆ Mumbai, India ◆ Supervisor: Dr. Nagarjuna Gadiraju

Discourse Topic Organizer: Web development project

- Discourse Topic Organizer is a plugin developed to organize the topics in a linear and nonlinear fashion to create learning sequences so that **discourse.org** can be used for online learning environments based on conversational engagement
- Could be used to transform a particular Discourse instance to be used as a Learning and/or Content Management System
- Used tools including Ruby on Rails, Javascript, HTML+CSS, PostgreSQL, Docker, and git to create the plugin which is now integrated into `https://stemGames.metaStudio.org` and `https://NROER.metaStudio.org`

ACADEMIC INTERN | National University of Singapore
June 2018 ◆ Singapore ◆ Supervisors: Dr. Tan Wee Kek and Dr. Wei Wang

Sentiment Analysis

- Hands-on learning program in Data Analytics using Artificial Neural Networks
- Developed a Sentiment Analyzer using statistical and deep learning algorithms on a 400,000 reviews dataset
- Naive Bayes classifier beat all other algorithms with an F1-score of 0.82.

PUBLICATIONS

JUNE 2021
Gautam Kumar Baboo, **Raghav Prasad**, Pranav Mahajan, and Veeky Baths. **"Tracking the Progression & Influence of Beta-Amyloid Plaques Using Percolation Centrality and Collective Influence Algorithm: A Study using PET images"** [submitted to Interdisciplinary Sciences, under review] (pdf)

TEACHING EXPERIENCE

TEACHING ASSISTANT | Computer Networks, BITS
January - May 2021 ◆ Faculty in-charge: Dr. Vinayak Naik

INSTRUCTOR | Introduction to Computational Thinking, Centre for Technical Education
September 2019 - June 2021 ◆ Faculty in-charge: Mr. R. B. Mouli

TEACHING ASSISTANT | Computer Architecture, BITS
August - December 2020 ◆ Faculty in-charge: Dr. Shubhangi K. Gawali

TEACHING ASSISTANT | Computer Programming, BITS
January - May 2020 ◆ Faculty in-charge: Dr. Bharat M. Deshpande

TEACHING ASSISTANT | Object-Oriented Programming, BITS
August - December 2019 ◆ Faculty in-charge: Dr. Neena Goveas

CONFERENCES AND WORKSHOPS

CERTIFICATE IN NETWORK MANAGEMENT | Nettech, BITS ◆ October 2017 ◆ Goa, India

LONDON INTERNATIONAL YOUTH SCIENCE FORUM | Imperial College ◆ July - Aug 2015 ◆ London

SAKURA SCIENCE PROGRAM | May 2015 ◆ Japan

ACADEMIC ACHIEVEMENTS

INSTITUTE MERIT SCHOLARSHIP
Received the Institute's Merit Scholarship at BITS in semesters 1 through 7

ACADEMIC INTERESTS

Operating systems • Human-Computer Interaction • Networks • Computational and Cognitive Neuroscience

SKILLS

LANGUAGES
C • Java • C++ • Python • JavaScript • Swift • C# • Shell scripting • R • HTML+CSS • Verilog

FRAMEWORKS, LIBRARIES, DATABASES AND TOOLS
Keras • Numpy • Pandas • Scikit-learn • git • MySQL • PostgreSQL • Flutter • Unity

EXTRACURRICULAR ACTIVITIES

REGIONAL COVID-19 MONITORING | Western Railways, Mumbai Division
April 2020 - Present ◆ In-charge: Dr. J.P. Rawat, Chief Medical Superintendent
Set up a database pipeline from data entry to analysis, to track the status of COVID-19 patients in the Western Railway, Mumbai division area which was used for contact tracing

STUDENT RESIDENT ADVISOR | BITS
August 2018 - June 2021 ◆ Mentor to 12 junior students

CRICKET CAPTAIN | The Cathedral and John Connon School
2015 - 2016 ◆ Mumbai, India

GUITARIST AND MUSIC COMPOSER