Bale Teja Rama Chandra Murthy   200050020

Computer Science & Engineering   B.Tech.

Indian Institute of Technology Bombay   Gender: Male

DOB: 28/04/2002

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2024	8
Intermediate	Board of Intermediate Education, Andhra Pradesh (BIEAP)	SRI CHAITANYA CO-EDUCATIONAL JUNIOR COLLEGE	2020	97.80%
Matriculation	Board of Secondary Education, Andhra Pradesh	SRI CHAITANYA HIGH SCHOOL	2018	10

Pursuing **Honors** in **Computer Science and Engineering**

SCHOLASTIC ACHIEVEMENTS

- Secured **All India Rank 263** in **Joint Entrance Examination Advanced** amongst 1,50,838 candidates *(2020)*
- Secured **All India Rank 185**, with a percentile score of **99.98** in **JEE Main** out of 1.02 million candidates *(2020)*
- Secured **100 percentile** in **Mathematics** in **Joint Entrance Examination Main** *(2020)*
- Cleared **RMO** and qualified to appear in the Indian National **Mathematics** Olympiad(**INMO**) *(2017)*
- Among India's **Top 800** students selected for Indian National **Chemistry** Olympiad(**INChO**) *(2019)*
- Scored **352 out 450** in the entrance test of Birla Institute of Technology and Science(**BITSAT**) *(2020)*
- Secured **39th** rank in **Science Talent Search Examination**(STSE) *(2018)*

INTERNSHIP EXPERIENCE

Real Time Fantasy Points Prediction | *Dream11*   *(Summer 2023)*

Data Science Intern

- Developed a **Real-time predictive model** for forecasting the player's Final Fantasy Points as the match progress.
- Conducted exploratory data analysis **EDA** on player's Fantasy Points, revealing distinct patterns in Fantasy Points variations among different categories (Batsmen, Bowlers, and All-rounders)
- Trained **Random Forest, XGBoost, Tabnet, and ANN models**, comparing MAE for performance evaluation
- Successfully Implemented Artificial Neural Network achieving an MAE of 13.56, resulting in a 45% reduction in error compared to the standard model's error of 25

KEY PROJECTS

Stock Market Prediction | *Course Project*   *(November'22)*

Guide: Prof. Abir De, Department of Computer Science & Engineering

- Explored and compared **CNN, LSTM and GRU** non-linear algorithms for capturing complex stock data patterns
- Compared model performance on Google stocks, observing LSTM and GRU roughly **10** times superior to CNN
- Identified LSTM and GRU's robust cross-stock generalization, with GRU showcasing superior performance

Float Moodle | *Course Project*   *(Autumn 2021)*

Guide: Prof. Amitabha Sanyal, IIT Bombay

- Developed a **Modular Object Oriented Dynamic Learning Environment** as a part of a team of 4 people.
- Used **Django** as the backend framework and **HTML** & **CSS** to implement the frontend and **PostgreSQL** database.
- Designed **Course Discussion forum, Analytics Page** and **Private Chat** using **redis server**

Hyperspectral Image Classification | *Course Project*   *(March'23 - April'23)*

Guide: Prof. Mohan B. Krishna, Department of Computer Science & Engineering

- Employed **Kernel PCA** on **Indian Pines** remote sensing data, elevating land cover classification accuracy.
- Designed efficient preprocessing pipeline, utilizing **Kernel PCA** for feature extraction and dimensionality reduction.
- Innovated **classification algorithm**, merging kernel methods & PCA, fine-tuning hyperparameters for precision.

P2P Application | *Course Project*   *(April'22)*

Guide: Prof. Kameswari Chebrolu, Department of Computer Science & Engineering

- Implemented a Peer-to-Peer network for downloading and searching required files up to a specified neighbour depth.
- Used C++ Socket Programming for TCP connections, enabling Client-Server file transfer with MD5 error detection

Study Planner App | *Course Project*   *(Autumn 2021)*

Guide: Prof. Amitabha Sanyal, IIT Bombay

- Built an Android App using **Android Studio** that keeps track of assignments, lectures and exam schedules.
- Added Navigation Menu and tabbed fragments to display different plans and events with a recycler view.
- Designed calendar for efficient task view, with event day markers and summarized counts on selected dates.

Gaia data Analysis | *Krittika Project* (July'22)
Guide: Himanshu Verma, Krittika - The Astronomy Club

- Employed a fundamental **ADQL query** to retrieve a data sample from the Gaia server
- Focused analysis on a specific class of sources within the Gaia catalog, establishing compelling distributions of diverse physical quantities and source characteristics
- Utilized Python for comprehensive data analysis, focusing on the study of Milky Way's stellar abundance properties

OTHER PROJECTS

EKart | *Course Project* (March'23)
Guide: Prof. S. Sudarshan, Department of Computer Science & Engineering

- Built E-commerce platform using **React**, **Node.js** & **PostgreSQL**, enabling interactions, listings & order tracking.
- Managed product data, user details, and orders using **PostgreSQL** for streamlined data organization and retrieval
- Designed user-friendly **UI** with product views, cart management, and user profiles, elevating the shopping experience

IPL Compiler | *Course Project* (January'23 - April'23)
Guide: Prof. Amitabha Sanyal, Department of Computer Science & Engineering

- Developed a **C-like language compiler** utilizing **flex** and **bison**, integrating **robust type checking**.
- Utilized **Sethi Ullman algorithm** for **optimal register utilization** in code generation.
- Enhanced compiler efficiency by implementing **fall-through code** for **control flow** statements, reducing code size.

Enhancements to xv6 OS | *Course Assignment* (August'23 - October'23)
Guide : Prof. Purushottam Kulkarni, Department of Computer Science & Engineering

- Enhanced system monitoring through process stats, mmap syscall with Page Fault handling, and lazy page allocation.
- Introduced Multithreading via clone and join syscalls, incorporating diverse CPU scheduling methods.
- Ensured concurrent execution with threading and robust synchronization mechanisms, reducing memory usage.

Digit Recognizer | *Self Project* (Summer 2022)
Deep Learning

- Constructed **ANN** from scratch using forward and backpropagation, optimizing training for accurate digit recognition.
- Attained **95.36%** validation accuracy training ANN on large digit dataset, fine-tuning parameters and architecture

Principal Component Analysis | *Course Assignment* (September'21)
Guide: Prof. Suyash Awate, Department of Computer Science & Engineering

- Denoised and reconstructed the images using the modes of variation having **eigenvalues** above a threshold.
- Used PCA for **dimensionality reduction, hyperplane fitting** and **classification** of images

TECHNICAL SKILLS

Programming	C/C++, Python, PostgreSQL, Java, JavaScript, HTML, CSS, Django
Software	Git, LaTeX, MATLAB, Android Studio
Python Libraries	SciKit, Pandas, NumPy, Plotly, Matplotlib, Streamlit, SciPy, PyTorch, Tensorflow

KEY COURSES UNDERTAKEN

Computer Science	Data Structures and Algorithms, Data Analysis and Interpretation, Software Systems Lab, Design and Analysis of Algorithms, Computer Networks, Digital Logic Design and Computer Architecture, Applied Algorithms, Operating Systems, Foundations of Network Security and Cryptography, Implementation of Programming Languages, Database and Information Systems, Digital Logic Design and Computer Architecture
Artificial Intelligence	Artificial Intelligence and Machine Learning, Speech and Natural Language Processing and the Web*, Foundations of Intelligent and Learning Agents*, Deep Learning - Theory and Practice*, Information Retrieval & Mining for Hypertext & the Web*, Advanced Methods in Satellite Image Processing
Others	Calculus, Linear Algebra, Differential Equations, Quantum Physics and its applications, Introduction to Electrical and Electronics Circuits, Economics

EXTRACURRICULAR ACTIVITIES *To be completed by November'23*

- Contributed 80+ hrs for community service under **Green Campus, NSS** IITB (2020-2021)
- Executed the **Powai Lake** Cleanup with **UNICEF** involving Larsen & Toubro and 300+ volunteers (June 2022)
- Successfully completed a 45hour Academic English Course under **British Council** (2020-2021)
- Participated in **Valorant** tournament conducted by **CSEA, IIT Bombay** (March 2021)
- Participated in **Call of Duty** tournament conducted by **CSEA, IIT Bombay** (July 2022)