NITIN SAI BOMMI

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Education

- **University of Hyderabad** — Hyderabad, India
  Integrated M.Tech - Computer Science; GPA: 9.7 — *August 2018 - June 2023*

  Courses: *Operating Systems, Data Structures and Algorithms, Software Engineering, Neural Networks, Deep Learning, Networks*

Skills Summary

- **Languages**: Python, JAVA, PHP, C++, JavaScript, SQL, Bash
- **Frameworks**: Scikit, TensorFlow, Keras, Flask, NodeJS
- **Tools**: MS Office, GIT, MongoDB, MySQL, SQLite, Latex
- **Platforms**: Linux, Mac, Windows, Arduino, Raspberry, Linode, Docker
- **Soft Skills**: Leadership, Event Management, Writing, Public Speaking, Time Management

Experience

- **Global Research Intern (Mitacs)** — Onsite
  University of Calgary, Canada (Full-time) — *June 2022 - Sep 2022*
  - **Analyze SOTA**: Read papers and interpret current state-of-the-art algorithms in the field of Reinforcement Learning.
  - **Programming**: Code the proposed algorithm and find potential insights.
  - **Others**: Collaborate with professors and other PhD scholars and submit papers to top tier conferences and journals.
  - **Mentor**: Prof. Hadi Hemmati
- **Research Intern** — Onsite
  University of Hyderabad, India (Part-time) — *Aug 2020 - Present*
  - **Research topic**: Machine Learning & IoT - Identifying vehicles in no honking zones.
  - **Role**: To detect, classify and localize horn sound and to extract the number plate of the vehicle.
  - **Progress**: Isolated sound from the microphone and deployed a machine learning model to classify the sound. Used vector operations to identify the source of the sound.
  - **Expected outcome**: Publication in a leading journal and patents.
  - **Mentor**: Prof. Siba Udgata, Prof. Nagender Suryadevara
- **Research Intern** — Remote
  University College Dublin, Ireland (Part-time) — *Oct 2021 - Feb 2022*
  - **Research topic**: Image Processing - Enhancing the computer vision results under diverse conditions.
  - **Role**: To devise an Image Processing algorithm to enhance the images being passed through the model. To conduct a visuospatial understanding experiment.
  - **Outcome**: Coordinated with the professor weekly and devised a novel algorithm and performed necessary experiments. Submitted the paper to a reputed IEEE conference.
  - **Mentor**: Prof. Soumyabrata Dev
- **Research Intern** — Onsite
  University of Hyderabad, India (Part-time) — *Mar 2021 - Aug 2021*
  - **Research topic**: Supervised Learning - Improve the regression results by using classification and clustering paradigms.
  - **Role**: To predict the regression values more accurately by embedding both classification and clustering tasks. To compare the results using a case study.
  - **Outcome**: Used the famous FIFA dataset for 3 different years and tested the approach with different preprocessing techniques. Made a detailed study on the latest approaches and prepared a comparison table. Submitted the work to a leading journal.
  - **Mentor**: Prof. Siba Udgata
- **Full-Stack Developer** — Remote
  Servyes (Part-time) — *Dec 2020 - Feb 2021*
  - **Work**: Built the core product (website) for a startup with PHP as the backend language.
  - **Role**: To build a web application using XAMPP stack.
  - **Outcome**: Used agile approach to coordinate with the team and built a full-functioning website with the desired and latest features. Successfully delivered the product within the allotted time and resources. Created manageable versions of the product for future development.

- **Research Intern** Onsite
  University of Hyderabad, India (Part-time) *Aug 2020 - Feb 2021*
  - **Research topic**: AI in Medicine - Reducing the number of false positives and false negatives while detecting COVID-19 using CT scan and Chest X-ray images.
  - **Role**: To identify the presence of COVID-19 from medical scans using AI techniques.
  - **Outcome**: Worked on two benchmark datasets and generalized the models to work on other datasets using Tensorflow. Analyzed different metrics and derived state-of-the-art hybrid algorithms that perform best with the chosen metrics. Integrated with website to allow people to directly upload either CT-scan/Chest X-ray images to get the result in milliseconds. Submitted both papers to two different journals.
  - **Mentor**: Prof. Siba Udgata, Rohit Bondugula

Projects

- **SCIS Forum**:
  - Discussed the drawbacks of the institution's website with the University's board members and proposed a solution.
  - Created a shared platform to share information with the whole university.
  - Improved user experience by adding dark-mode, easy-to-navigate UI and chat feature.
  - Used AI techniques to allow the user to login through face and filter unparliamentary words in posts.
  - Embedded AI techniques to monitor the content and filter inappropriate activity.
  - Working on making it a product to benefit all students by bringing them under a common platform to share knowledge.
- **Cheating Detection System**:
  - With the current pandemic, all educational institutions are moving to online exams. So it is necessary to manage students online to make the remote exams fair.
  - The software aims to build a cheating detection system to improve the standards of online exams, ease the load on teacher and ensure exams' integrity by confirming the student's identity and monitoring him/her through a webcam.
  - Presented in a tech fair and many high profile judges showed immense interest.
- **No Code AI**:
  - An interactive machine learning tool where you can: drop off your files, choose the features you want to train on, pre-process the data as you wish, choose your own model, tune the hyper parameters and compare models without writing a single line of code.
  - Successfully inspired my classmates and my juniors by driving their interests towards AI.
- **Face Mask Detection**:
  - One of the first unique approaches towards face mask detection system in India.
  - A model which predicts the state of the mask worn by a person. The project is extended to 3 classes: mask worn correctly, mask worn incorrectly and mask not worn.
  - Used transfer learning to build a more robust model.

Publications

- **A Novel Weighted Consensus Machine Learning Model for COVID-19 Infection Classification using CT scan Images**: Accepted in June, 2021 at Arabian Journal for Science and Engineering (2.334). **pdf**
- **A Multi-Stage Deep Learning Model for COVID-19 infection classification using Chest X-ray and CT-Scan Images**: Under review at Medical & Biological Engineering & Computing (2.602).
- **Novel Hybrid Machine Learning Models for Value Estimation of International Football Players**: Under review at Expert Systems with Applications (6.954).
- **A parallelised model towards solving the weighted consensus approach for classifying COVID-19 infection**: Accepted in Nov, 2021 at International Conference on Machine Learning, Internet of Things and Big Data. **pdf**
- **Detecting objects under extreme illumination conditions**: Under review at International Conference on Image Processing.

Achievements

- Runner up at Smart India Hackathon - 2022 (Internal)
- Runner up at IITB Techfest - 2022
- 1000/10000 in HashCode - 2022
- Best prototype award in Archetype - 2021
- WHO cited my paper on their website and included in their covid repository - 2021
- Emerging tennis player - 2021
- University record of 10 pointer - 2019
- Best cultural fest performance in University - 2019
- School topper with 93.17% - 2016
- Fastest piano player award with 99% - 2010
- Winner of a painting competition - 2007

Certifications

- CHARAK core member.
- Deep Learning specialisation by Andrew Ng.
- Python Bootcamp by Jose Portilla.
- Python for Everybody by Charles Severance.
- Basketball inter school championship runner-up.
- Fastest piano player.
- Machine Learning by Andrew Ng.

Interests

- Piano
- Singing
- Reading research papers
- Coding
- Painting
- Tennis
- Basketball
- Football
- Teaching
- Content writing

Miscellaneous

- Participated in workshops: MLH, hacktoberfest and college coding competitions.
- Contributed to 40 repositories alone and 10 repositories by collaborating.
- Mentored many students including seniors, classmates and juniors.
- Worked with Ph.D. scholars during covid and built many valuable products in my university.
- Worked with the university team on a product and built the core ML model

Present Work

- Working under a highly experienced team of industry experts and Prof. Siba Udgata on improving the teaching techniques in Indian Universities by embedding NLP techniques and advanced AI techniques.
- Drafting 2 more journal papers: one based on skin lesions and other based on brain diseases.