# Sahiti Cheguru

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## EDUCATION

**GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY**
B.TECH IN COMPUTER SCIENCE AND ENGINEERING
Expected date: May 2021* | Hyderabad, India • **CGPA: 9.79/10.0**

**SRI CHAITANYA JUNIOR KALASALA** | 12TH GRADE
Mar 2017 | Hyderabad, India • **PERCENTAGE: 96.4%**

**BHARATIYA VIDYA BHAVAN'S PUBLIC SCHOOL, BHEL** | 10TH GRADE
Apr 2015 | Hyderabad, India • **CGPA: 9.8**

## RESEARCH INTERESTS

Machine Learning, Computer Vision, Deep Learning, Natural Language Processing, Artificial Intelligence, Data Science.

## INTERNSHIPS

**INMOVIDU || MACHINE LEARNING INTERN (NLP)** May 2020 - Jul 2020

- Worked on **Face Mask Detection** project.
- Experimented with various **single and multi stage object detection** algorithms such as **Haar Cascade, RCNN, YOLO, RetinaNet, Dlib DNN and MTCNN**.
- Provided a comparison study based on the results of the model **NASNetMobile, DenseNet121, MobileNetV2** for **Face Mask Classification.**

**GOAL STREET || MACHINE LEARNING INTERN** Apr 2020 – May 2020

- Worked on live capstone project, **Sentiment analysis on COVID-19 tweets using python**.
- Worked on data cleaning, feature selection, sentiment identification, and classification of textual twitter data.
- Calculated sentiment polarity, and subjectivity using **TextBlob library** and **VADER sentiment lexicon**.

**ZEOMINDS IT SOLUTIONS PVT. LTD || MACHINE LEARNING INTERN (NLP)** June19 -Jan 2020

A data driven company with expertise in building products, solutions in the area of Artificial Intelligence, Big data and cloud technologies.

- Worked on **real-time software development project** and built **AI chat bots** using **AI markup Language** and **Dependency Parsing Algorithm**.
- Developed **opinion based sentiment analysis** and **brand analysis** software for marketing campaigns using **POS Tagging** and **Lexical SentiWordNet**.
- Coordinated with the **web scrapping** team and worked intensively on **Selenium Web Driver** web crawling framework while dealing with **Dynamic WebPages**.

**ADVANCED ACADEMIC CENTER || TRAINER AND PROJECT MENTOR** Aug 19 – Dec 2019

Advanced Academic Center (AAC) is an inter-disciplinary research center of GRIET, Hyderabad, dedicated to excellence in teaching, learning and research.

- Taught **python programming language** to a class of 70+, assigned homework and assignments, evaluated them.
- Took responsibility as a project mentor for **projects Image-Based Tomato Leaves disease detection using "VGGNet"**; better results compared to all other algorithms such as **LeNet, ResNet50, and Xception**, achieving **99.25% test accuracy** .

# RESEARCH PAPERS

## OPTIMAL HYPERPARAMETER TUNING OF CONVOLUTIONAL NEURAL NETWORKS FOR VISUAL SENTIMENT ANALYSIS

- Experimented the feature based and template matching methods for **face detection** such as **YOLO, RetinaNet, Dlib DNN**; Used **CNN** for **feature extraction** and **V3 model** for **emotion classification**.
- Used **Hyperparameter Tuning** to find the optimal number of **epochs and batch size** needed to process the data and get the best accuracy measure and augmented the accuracy by experimenting with different **optimizers**.
- Provided a comparison study based on the results of the model **NASNetMobile, DenseNet121, MobileNetV2** for **face mask classification**.
- **Accepted** for publication in **Walailak Journal of Science and technology - International Scopus Indexed Journal**.

## POSE ESTIMATION FROM RGB CAMERA DATA USING DEEP LEANING TECHNIQUE, PARSING R-CNN + RESNET 50

- Designed a two stage **Deep Learning Model** which used **2D pose detector** for **location potential pixels**.
- **2D key points** are mapped into **3D poses** using **DNN** and **Image based representation**.
- Presented a region-based approach, **Parsing RCNN** for instance-level human analysis demonstrating better results compared to algorithms like **ResNet50-FPN**.
- Paper **under review** in **International Journal of Computer Sciences and Engineering** - IJCSE-088380-57

## AUTOMATIC SEGMENTATION OF MUSIC GENRES - CNN USING TENSORFLOW AND MUSIC INFORMATION RETRIEVAL TECHNIQUE

- Implemented Deep Learning approach of using **CNNs** for **audio representation (Mel Spectrogram)** to extract and classify features.
- Explored the **automatic classification of audio signals** into an hierarchy of musical genres by **incorporating parallel pipelining with RNN and CNN**.
- Achieved **83% precision** and improved model accuracy by adjusting **Hyperparameter optimization techniques** by deriving an **optimal learning rate**.
- **Accepted for publication** in **High technology Letters - International Scopus Journal of Scientific Research**.

# REVIEW PAPERS

## TENSORFLOW MODEL IN MEDICAL IMAGE ANALYSIS - A COMPLETE REVIEW

- This review paper presents one of the major Deep Learning techniques named **TensorFlow** to investigate images in scanned **CT medical images** for **visualization of abnormal conditions of live tumour** in the context of shape and color towards disease diagnosis.
- Surveyed the utilization of **TensorFlow** for classifying images, detection of objects, analysis of liver cancer for **genome classification and identification of lesions**.
- **Under review** in **International Journal of Advanced Trends in Computer Science and Engineering.**

## DEEP LEARNING METHODS FOR FORECASTING COVID-19 TIME-SERIES DATA - A COMPARATIVE STUDY

- In this paper, forecast models comprising various AI approaches such as **Support Vector Regression (SVR), Long Short Term Memory (LSTM), Bi-Directional LSTM, Gated Recurrent Unit (GRU), VB-Neural network, CUBIST, RIDGE, stack ensemble learning and ARIMA model** are assessed for **time series prediction** of confirmed cases, deaths, and recovered due to **COVID-19**.
- Developed a **modeling paradigm** for infectious diseases based on **GNN's and high resolution mobility data**.
- **Accepted** for publication in **Machine Learning Methods for Signal image and Speech Processing, a Scopus indexed Lecture Notes.**

# CONFERENCE PROCEEDINGS

### POLITICALLY BIASED NEWS DETECTION USING MACHINE LEARNING TECHNIQUES

- This project joins the powers of **Neural Networks** and **Computational Linguistics** to **detect political bias** persisting in news articles and computes **binary classification** of articles by grouping them as **biased and non-biased**.
- Deep learning tools such as **Bag-of-words, Word embeddings, and Doc2Vec along with Long Short-Term Memory (LSTM) networks** are used to identify bias in a training dataset of 600,000 articles and validation dataset of 150,000 articles.
- **Accepted** for virtual presentation in **International Conference on Sustainable Computing and Intelligent Systems (ICSCIS'21);** Proceedings in **Springer: Algorithms in Intelligent Systems.**

### GROUP DISCUSSIONS ANALYSIS AND DIGRESSION INTERVENTION

- In this paper, a platform is developed that facilitates the exchange of thoughts and information among students, using **leveraged NLP** to categorize texts into **Book relevance, Type of message , Broad category of the book classification**.
- Computed and compared models such as **Naïve Bayesian (NB), Random Forest (RF), Support Vector Machine (SVM), and Logistic Regression (LR), Elmo Embeddings**; Fine-tuned the **end-to-end BERT Neural Network**, yielding a significant increase in performance.
- **Accepted** for virtual presentation **in International Conference on Sustainable Computing and Intelligent Systems (ICSCIS'21)**; Proceedings in **Springer: Algorithms in Intelligent Systems.**

# COURSE PROJECTS

- Implementation of **Karnaugh Maps** for solving **Boolean expressions** using **Advanced C/C++ graphics**.
- **Process Synchronization**: Critical Section Problem in OS using **JAVA Object Oriented Programming** concepts.
- Fine Grained Insincere Questions Classification using **Ensembles of Bidirectional LSTM-GRU Mode**l.
- Predicting Closing Prices of Dhaka Stock Exchange using **Support Vector Regression**.

# CERTIFICATIONS

- **IBM Professional Data Science** Certification.
- **IBM Applied Data Science** Certification.
- **IBM Advanced Data Science** Certification.
- **IBM AI Engineering** Certification.
- **Applied Data Science with Python** by **University of Michigan**.
- **Advanced Machine Learning** by **National Research University Higher School of Economics**.
- **Machine Learning with TensorFlow on Google Cloud Platform** specialization course by **Google**.
- **Advanced Machine Learning with TensorFlow on Google Cloud Platform** specialization course by **Google**.
- **Tensorflow in Practice** and **Deep Learning** Specialization by **deeplearning.ai.**
- **Reinforcement Learning** Specialization by **University of Alberta**, Alberta Machine Intelligence Institute.
- **Mathematics for Machine Learning** Specialization by **Imperial College London**.
- Award of Achievement for completing the **Oracle Academy Database Design** and **Database Programming with SQL**.
- Elite certificate for completing the course **Problem Solving through C** from NPTEL Online Certification, **IIT Karangpur**.
- Certificate of Merit from **Oxford Achiever**, an online English learning and assessment system by **Oxford University**.
- Course completion certification from **CCNA** " Routing and switching", "Network Essentials", "Programming Essentials through Python Programming", "Programming Essentials in C++", "Advanced Programming in C++"

## TECHNICAL SKILLS

- **Programming Languages**: C, C++, Java, Python, R, CSS, XML, HTML, JavaScript, MatLab, Google Cloud Programming, SQL
- **Technologies**: Tableau, Scikit, Pandas, Keras, TensorFlow, PyTorch, Tomcat, IBM Watson, Oracle-DBMS

## AWARDS AND EXTRA CURRICULARS

- Received **Kulapati K.M.Munshi Award in Mathematics** for receiving 10/10 grade point in the **AISS Examination 2015** conducted by **CBSE**, New Delhi.
- **Ranked Top 1** in **Computer Science and Engineering department, GRIET** for **Academic Excellence**.
- Among **Top 7% and 28%** in two competitions ( International rank ) for " **House Prices: Advanced Regression Techniques** " and " **Digit Recognizer- MNIST data**"
- **Finalist** in **AICTE Hackathon** among 80 teams conducted by JNTUH; Developed a **Self Driving Car** algorithm based on reinforcement learning- Deep Q-Learning approach.
- Qualified for **Final round** in **Smart India Hackathon**; Problem Statement given by Indian Space Research Organisation (**ISRO**): **Sentiment Analysis from text feedback**; Involves classification of individual comments/reviews and determination overall rating.
- **President** of **Advanced Academic Center**, an inter-disciplinary Research Center of GRIET, Hyderabad. AAC is dedicated to excellence in teaching, learning and research.
- **Manager** for **Outgoing Global Volunteer** (OGV) team for **AIESEC**, an International youth- run, non-governmental and not-for-profit organization that provides young people with leadership development.
- **Volunteer** for **Menstrual Hygiene Awareness program** and **tutor** for **National Means and Merit Scholarship (NMMS) examination; Initiated by Youth for Seva Foundation (YSF).**

## MEMBERSHIPS

- Computer Society of India, Student Club- GRIET
- Indian Society for Technical Education, Student Club- GRIET
- Toastmasters International

## LANGUAGES

English, Telugu, Hindi