

# Deepti Saravanan

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## EDUCATION

- **National Institute of Technology Trichy, India - Btech CSE, Management Studies (Minor)** CGPA 8.3  
*Relevant Courses:* ML, NLP, Advanced DBMS, Image Processing, Probability Theory, Design Thinking May 2020
- **Class 12 CBSE, Srimathi Sundaravalli Memorial School** 94.4 percent  
*Mathematics and Biology group* May 2016

## RESEARCH AND DEVELOPMENT EXPERIENCE

- **JP Morgan Faculty Research Award - Regulatory compliance in IB** June 2020 - Present  
*Guide:* Prof. Dr. Kamalakkar Karlapalem, Dept. of Computer Science, IIIT-Hyderabad
  - Generic Template and Dynamic Semantic Net creation
  - Language Modeling - Agile development of automated Question-Answering Model and strategic recommendations to the FinTech business tackling multiple interpretations
  - **Technologies used:** CoreNLP, BERT, Bit Vectors, Dependency Tree, Web Scraping, Topic Modeling, Hierarchical Clustering, SpaCy custom model, word2vec embedding, Scikit-learn, Strong financial acumen
- **Single-Cell RNA-Protein sequencing and pseudotime trajectory inference** June 2020 - Present  
*Guide:* Prof. Dr. Hamim Zafar, Dept. of Biological Sciences and Bioengineering, IIT-Kanpur
  - Feasibility assessment and strategic development of algorithm and analysis plan that can model an intelligent solution for effective pseudotime trajectory creation by employing generative model and performing inter-cluster analysis and linkage in the latent space, with data visualization results delivery.
  - **Technologies used:** Biopython, SciPy, Variational Inference, Post-predictive Analysis, PAGA, Seurat
- **Adaptive Learning Management Expert System** Jan 2020 - July 2020  
*Guide:* Prof. Dr. M. Brindha, Dept. of Computer Science, NIT-Trichy
  - Dynamic Knowledge Base and Interactive UI with integrated feedback mechanism.
  - Created a Statistical Cognitive Mathematical Model relating Learning speed of users with the difficulty level of the course and time taken to complete one course material.
  - Dynamic Estimation of Difficulty indices - optimal cognitive load.
  - **Result:** Quantitative - Mann-Whitney test with 0.1 increase in T-value — Qualitative - comparative tests (features and results) with the existing solutions.
  - **Technologies used:** MEAN Stack, Threshold-based classification, Web Scraping, LDA, Heroku, Django
- **Multimodal problem - Image Processing using Deep Learning** August 2019 - Dec 2019  
*Guide:* Prof. Dr. M. Sridevi, Dept. of Computer Science, NIT-Trichy
  - Developed automated system for image recognition, segmentation and classification of brain tumors by defining, building and deploying the strategy.
  - **Result:** An accuracy of 84 percent achieved.
  - **Technologies used:** CNN, OpenCV, Tensorflow, Keras and Numpy as the training architecture.
- **Explainable Graph Classification - Big-Graph Analytics** May 2019 - July 2019  
*Guide:* Prof. Dr. Arijit Khan, School of Computer Science and Engineering, NTU Singapore
  - Embeddings of frequent subgraphs extracted from the given pbmc dataset was converted to 2D image grids by stacking 2D histograms for classification by a CNN.
  - DeepLift Model - Value of importance to subgraphs for carcinogenic chemicals.
  - **Result:** An accuracy of 80 percent was achieved.
  - **Technologies used:** CNN, numpy, subgraph algorithms, vectorization algorithms, tensorflow and keras architecture.
- **Development of Application Tracking System (Resume Classifier)** May 2018 - July 2018  
*Scorpion Ventures, Chennai*
  - Developed Application Tracking System with user-centered design as a software product for Smart Resume Classification - turning detailed data analysis into useful strategic insight to drive customer adoption.

- **Technologies used:** spaCy,NER,gold parser,gensim,cosine similarity,vector space model, NLTK.

## • **Dynamic Estimation of hidden layers in a neural network**

**Dec 2017 - Feb 2018**

*Guide:Prof. Dr. C. Mala, Dept. of Computer Science, NIT-Trichy*

- Compared and analyzed the performance of Neural Networks with analytical tools and techniques based on the number of hidden layers with a given constant weightage and vice-versa for the datasets.
- **Result:** R score value of 0.95 was achieved.
- **Technologies used:** MATLAB,Neural Nets and graph plot libraries.

## **PUBLICATIONS**

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### • **Dynamic Estimation of hidden layers in a neural network for a city scale transportation system**

*Deepti Saravanan, Dr.C.Mala*

- Presented in International Conference on Electrical, Communication, Electronics, Instrumentation and Computing(IEEE ICECEIC) and published in IEEE Xplore digital library.

### • **Adaptive Learning Management System with Evolving Knowledge Base and Enhanced Learnability**

*Deepti Saravanan, Et al.*

- Elsevier Journal Review in progress - Knowledge-Based Systems

## **SKILLS**

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- **Proficient:** Python, R, C/C++, Tensorflow, Keras, MySQL, MATLAB, Advanced Excel/spreadsheets
- **Intermediate:** Android Studio, Django, Javascript, HTML, CSS, Git
- **OS:** Linux, Windows
- **Interests:** Writing, Piano, Classical Dance, Music, Personal Knowledge Development, Travel and exploration

## **MINI-PROJECTS**

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- **Twitter Data Mining (Oct 2017):** Data exploration of tweets and developed code to count the number of tweets every two hours. **Technologies used:** R,Wordcloud.
- **Sexual Assault Data and Sentiment Analysis (Oct 2017):** Automated hashtag scraping of data from social media - visually analysed the dangers geographically. **Technologies used:** R, Wordcloud, Sentiment analysis.
- **Online Intern Search Portal(Oct 2018-Nov 2018):** Use-case Data Exploration and long term analysis of needs - Developed a web application with separate homepage facilities for students and professors respectively to match interest fields and connect them. **Technologies used:** NodeJS, MySQL, HTML, CSS.

## **LEADERSHIP EXPERIENCE**

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- **Research Head, DataByte, NIT-Trichy:** Led a team of undergraduates with a passion for AI to work on research projects and conducted an introductory workshop on the basics of Machine Learning concepts and programming in Python for sophomores.  
**Soft Skills:** Communication skills (verbal and written), Effective collaboration and team work, Leadership quality, analytical skills, Interpersonal skills.
- **Webmaster, IEEE Student Branch of NIT-Trichy:** Maintained the IEEE SB of NIT-T's webpage and social media to update students regarding upcoming events.  
**Soft Skills:** Time Management.
- **Head, Workshops Team, Vortex 2020:** National Level Symposium of the Department of CSE. Led a team of 20 students to bring down renowned researchers for conducting workshops at NIT Trichy and outreach workshops at other universities.  
**Soft Skills:** Decision Making Skills, Leadership quality, Team work, Time Management, Proactive Communication, Interpersonal skills.

## **EXTRA-CURRICULARS**

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- **Coordinator, Events Team, Festember '18 and '19:** National Level Cultural Festival of NIT Trichy with footfall of more than 5000. Responsible for ideating event ideas with an element of creativity and coordinating more than 50 events conducted by the various literary and arts clubs of NIT Trichy.