Divya Spoorthy

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Education

2021 - 2023 **Master of Science in Computer Science**.
Boston Univeristy

2015 - 2019 **Bachelor of Technology in Engineering Science**.
Indian Institute of Technology (IIT), Hyderabad, *GPA 7.23/10*

2013 - 2015 **Intermediate**.
Narayana Junior College, Kurnool, *PERCENTAGE 94/100*

2012 - 2013 **Secondary Board of Education**.
Montessori High School, Kurnool, *GPA 9.5/10*

Research Interests

Computer Vision, Machine Learning and Deep Learning

Experience

July 2020 - till Date **Senior Software Development Engineer**, *Oravel Stays Pvt Ltd (OYO) / Traum Ferienwohnungen*, Bangalore.

- Designed and implemented new micro services breaking the monolith traum service (legacy system) which enabled better scalability, maintenance and efficiency.
- Monitoring freshers and interns and helped in strategic planning to help them better adapt to the organisation.

June 2019 - August 2020 **Software Development Engineer**, *Oravel Stays Pvt Ltd (OYO) / Traum Ferienwohnungen*, Bangalore.

- Developed a search feature for retrieval of marketing information and implemented a caching algorithm to improve its performance.
- Designed a big data architecture to queue and manage time consuming tasks on distributed clusters using Kafka.
- Designed a more maintainable alternative to a complex architecture and implemented safe interfaces to migrate large scale production data stored using it.
- Designed and implemented backend apis and database structure for a new ratings service for traum guest portal

May-July 2018 **Data Science intern**, *AVR Edge Networks Pvt Ltd*, Bangalore.

- Worked to create Edge Graph, an optimal search engine.
- Text Normalization using CESI (Canonicalizing Open Knowledge Bases using Embeddings and Side Information) and web scraping techniques.
- Entity Categorisation, Entity Normalization using and Bi-directional LSTMs

Publications

Jan 2018 - Feb 2019 **Automatic Identification of Mixed Retinal Cells in Time-Lapse Fluorescent Microscopy Images using High-Dimensional DBSCAN**, *IEEE EMBS Conference*, Divya Spoorthy, S Jana, Berlin **[IEEE document]**.

- Designed a high-dimensional version of DBSCAN for automatic spatial and temporal cell identification of high-resolution time-lapse microscopic images.
- Upto 80 percent improvement in accuracy was observed when compared to other traditional 2Dimensional techniques.

Projects/Research

Mar 2019 **Hierarchical semantic image matching using CNN feature pyramid**, *Dr.Sumohana Channappayya*.

- Estimation of Flow field from source image to target image using CNN Flow and fully trainable Deep Matching to improve the state of the art methods like Homography + SIFT and FLANN + SIFT.

Feb 2019 **Data Center Monitoring System**, *Dr. Bheemarjuna Reddy*, **[Report]**.

- Implemented Backend, Frontend and Analytics systems for monitoring a large scale data center using Prometheus and Graphana which monitors important system parameters of server nodes and environmental factors' time series data and analyses it.
- Made exporters for Environment IoTs like sensors and raspberry pi's data to be streamed and integrated with our pipeline.
- Developed custom authentication protocols for taking actions in a secure manner in case a risk is detected.
- The final product is deployed in IIT Hyderabad's Data center used by professors and researchers.

Oct 2018 **Query Segmentation using LSTMs**, *Dr. Maunendra Desarkar*, **[Report]**.

- Mapped segmentation of queries in search engines for optimal information retreival to a sequence tagging problem.
- Used LSTM and bidirectional LSTMs with CRF Layer to improve performance of existing models.
- Wikipedia n-gram frequency based normalization and Conditional random field techniques were used as baseline performance.

Sept 2018 **Predicting non-small cell lung cancer prognosis my fully automated microscopic pathology image features**, *Dr. Sumohana Channappayya*, **[Report]**.

- Histopathology images streamed and preprocessed from TCGA website using GDC API.
- The images were tiled, selected and profiled for several properties using CellProfiler.
- Several Machine Learning models like Random forests with conditional inference trees/Breiman method and SVMs with different kernels were applied on the data obtained to predict prognosis on the cell.

March 2018 **Image quality assessment for Face Recognition**, *Dr. Sumohana Channappayya*.

- Face detection and Localization using Viola Jones Haar feature based cascade classifier
- Face subset selection using CNNs
- Face Feature Selection using Local binary Patterns and Histogram of Oriented Gradients
- Mutual Subspace Method for face set matching

Jan 2018 **Finding Right Expert for Questions**, *Dr. Manish Singh*, **[Report]**.

- Finding the right expert, given a specific question and a set of expert profiles as input.
- Obtained the content data of experts from Stackoverflow Data-UCI.
- Initially, all the keywords are extracted from the data and expanded by scraping the relevant data from WikiBooks webpage
- Index all returned Wikibooks data using tf.idf of the bi-gram collocations obtained from the questions Return the ranked list of experts based on the vector indexing

Aug 2017 **Color Constancy using Deep Learning**, *Dr. Sumohana Channayyappa*, **[Report]**.

- Developed a Color Constancy algorithm using Convolutional Neural Networks in python which predict with nearly 80% accuracy using two different kinds of datasets

May 2017 **Anemic Blood Detection using Image Processing and ML**, Dr. Sumohana Channayyappa.

- Objective of the project is to be able to predict if a person is anemic or not just by taking images of his/her blood sample and use color image processing to obtain intensities of the color blood images
- Developed a Camera setup for taking images under uniform illumination and code for segmentation of the color images taken using the camera setup for finding the pixel intensities
- A Machine Learning classifier that can classify anemic and non-anemic blood based on the color images taken

Technical skills

Languages	C, C++, Python, Java
Web	HTML, CSS, NodeJS, AngularJS, Prometheus, Graphana, Kafka, Kibana, Kubernetes
Data Science	Numpy, OpenCV, PyTorch, Tensorflow, Matlab & Simulink
Misc.	Arduino, SolidEdge, ModelSim, MS Office

Academic Coursework

Machine Learning	Applied Machine Learning, Applied Deep Learning, Bayesian Data Analysis, Introduction to Artificial Intelligence, Theoretical Deep Learning
Data Science	Data Mining, Information Retrieval, Practical Challenges in Image Analysis
Computer Science	Computer Networks and Hardware Security, Advanced Data Structures and Algorithms, Discrete Structures, Compilers, Software Engineering
Mathematics	Probability, Statistics, Calculus, Differential Equations, Linear Algebra

Academic Achievements

- Paper chosen for poster presentation in IEEE EMBS Conference.
- Received A+ (top 2%) in Undergraduate Honors Project under Dr. Soumya Jana.
- Secured a 1197 rank in JEE Advanced 2015 out of 150,000 students.

Position of Responsibility/Extra Curricular

- Mentored students in making innovative projects as a core member of Robotics Club.
- Participated as the representative for Women's Volleyball team in Inter IIT Sports Meet – 2015-17
- Managed inventory as a member of hospitality team in Tech/Cultural Fest in college.
- Organized and managed Inter divisional Sports fest in College.