

Divya Spoorthy

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🌐 <https://github.com/dspoorthy>

Education

- 2021 - 2023 **Master of Science in Artificial Intelligence.**
Jan Boston Univeristy GPA 3.90/10
(expected)
- 2015 - 2019 **Bachelor of Technology in Engineering Science.**
Indian Institute of Technology (IIT), Hyderabad

Research Interests

Computer Vision, Machine Learning and Deep Learning

Experience

- July 2020 - **Senior Software Development Engineer, Oravel Stays Pvt Ltd (OYO) / Traum Ferien-**
till Date **wohnungen, 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 - **Software Development Engineer, Oravel Stays Pvt Ltd (OYO) / Traum Ferienwohnun-**
August 2020 **gen, 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

Publications

- Jan 2018 - **Automatic Identification of Mixed Retinal Cells in Time-Lapse Fluorescent Mi-**
Feb 2019 **croscopy 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

- Jan 2022 **Text Based Image Inpainting Detection, Dr. Bryan Plummer, [Report].**
- We leverage the text data for image localization and find the inpainted regions from the localized part of the image and our model is designed to detect both manual and Deep Learning Based Inpainting
 - MDETR based object detection is used where we localize the inpainted region based on text. Later, IID-Net is used for inpainting detection of the cropped images.
 - This work is novel and to the best of our knowledge the first text guided model in literature and still in progress
- Feb 2022 **Manipulating Stochastic Gradient Descent with Data Ordering Attacks, [Code].**
- By taking advantage of stochasticity of SGD and the fact that order of data influences training procedure data ordering attacks were implemented.
 - Batch reordering, Batch reshuffling and Backdoor attacks were introduced where a surrogate model is trained simultaneously to reorder the data points wrt the losses or gradients and the test accuracy of the source models drastically. Different kinds of models used were as follows: LeNet, ResNet18, ResNet50, ViT-b-16.
 - Datasets used were CIFAR10, CIFAR100, SVHN and Plant Seedling.
- Dec 2021 **COVID-19 Instagram posts emotion detection (anger, fear, joy, and sadness) in relation to images of East Asian people.**
- Emotion Detection on Instagram posts using **Sentiment140 dataset**
 - Used BERT fine tuned model to train on training data of twitter. Used BERT(small) with Adam optimizer and obtained accuracy upto 72 - 74 percentage
 - Other baseline models used for comparison were support vector machines, naive bayes, random forest classifier and Multilayer perceptron. Extensive details can be found **here** -
- Feb 2022 **Pleural Line Detection in Lung Ultrasound Images.**
- Implemented template matching using normalized cross correlation variant for pleural line detection in Lung Ultra Sound Images for detection of pneumonia.
 - Building a classifier for these images using ResNet18 and ResNet50 (on going work)

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.