EKANSH VERMA
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## EDUCATION & SCHOLASTIC ACHIEVEMENTS

| Program | Institution | Year of completion |
|---|---|---|
| Dual Degree in Engineering Design<br>Specialization: Biomedical design | Indian Institute of Technology Madras, Chennai | 2017 |
| XII (CBSE) | Pragati Vidya Peeth, Gwalior | 2012 |
| X (CBSE) | No.1 Air Force School, Gwalior | 2010 |

- **Top 1%** all over India in IIT-JEE and AIEEE (AIR 3413 in JEE and 2860 in AIEEE) (2012)
- Secured **All India Rank 72** in Graduate Aptitude Test in Engineering (GATE) (2016)

## ACHIEVEMENTS

Contest on Mitosis Detection in Phase Contrast Microscopy Image Sequences : **CVPR 2019** **(**2019)

- Ranked 1st Globally in the final leaderboard of the challenge. Attained F1 score of **0.8804** on the final test dataset.
- End to end spatiotemporal detection pipeline using 2D mitotic segmentation and CNN-LSTM for temporal refinement

Classification of Normal vs Malignant Cells in B-ALL White Blood Cancer Microscopic Images: **ISBI 2019** **(**2019)

- Ranked 2nd Globally in the final leaderboard of the challenge. Attained F1 score of **0.8947** on the final test dataset.
- Built an ensemble of CNN classifiers with different pre-processing strategies and carefully crafted validation schema

Ranked 3rd nationwide in **Goldman Sachs' ABLE Competition** **(**2015)

- Developed a mobile application for **text recognition in real time** and converted it to speech to aid the visually impaired
- Trained various English fonts for optical character recognition using Tesseract library thereby increasing the accuracy **by 14%**

## PUBLICATION

**A Statistical Engine to Model Well Operations and Evaluate Asset Performance accepted** for **SPE Liquids-Rich Basins Conference - North America, 5-6 September, Midland, Texas, USA**

- A novel workflow was developed which learns the production characteristics of a well through a statistical framework using principles of signal processing and Bayesian inferences.

## PROFESSIONAL EXPERIENCE

**Schlumberger Limited, Pune (**Data Scientist) (July'17-Present)

**Image segmentation**

- Designed the end to end pipeline to extract various well-log curves present in the scanned images.
- Implemented deep learning semantic image segmentation models such as U-Net and FPN (Feature Pyramid Network).

**Well Log interpretation**

- Designed and implemented multiple output **sequence to sequence regression model** using **LSTM and convolution neural networks** where well logs are modeled as temporal sequence.
- Implemented gradient boosting, random forest and autoencoders (to fill missing features) for further integration.

**Embedding learning**

- To learn meaningful fixed vector representation of well-log data using the triplet network and customized triplet loss in unsupervised fashion
- Successfully implemented the deep triplet network involving convolutional and LSTM operations and visualized 3D projections in tensor-board projector for validation**.**

**Geometric Limited, Pune –**Internship in collaboration with **NVIDIA DRIVE PX** team (Jan-May'15)

- Detected objects (car, bike, bus, pedestrian), visual orientations and classified objects into sub-categories
- Implemented Convolution Neural Networks, support vector machines with histogram of oriented gradients classifier
- Utilized NVIDIA deep learning GPU training system; achieved accuracy of 87% on standard KITTI detection dataset

## PROJECTS

- **Multiple Sclerosis Lesion segmentation-Dual Degree project/thesis:** **(**July'16-Feb'17)

  Implemented voxel-wise classifier using 3D patches of MRI volumes as input; trained **3D convolution neural networks**

  Obtained accurate results with dice scores comparable to inter-rater variability; mean dice score achieved is **81.87%**

- **A Case Study on Cost Estimation and Profitability Analysis of Northeast Airlines:** **(**Nov'15)

  Identified the outliers and the correlated variables present in dataset; developed a **linear regression model**

  Integrated a profitability analysis to project quarterly profits for the upcoming fiscal year using predictors

- **Intelligent Ground Vehicle Challenge** *International Robotics Challenge at Oakland University, Michigan* **(**Nov'13-Dec'15)

  Designed and computer-simulated an **unmanned vehicle** at the **Center for Innovation IITM**

  Formulated optimization model for shock absorption; obtained suspension parameters using Simulink®; implemented in vehicle

  Awarded **Innovative Student's Project Award** from IIT Madras and garnered funds of **INR 2.65 lakh** for project expenses

- **Driving Assist for people with weak limbs:** **(**Oct'14-Nov'14)

  Prototyped a retrofit device for cars with sensory input from legs and hand; to operate accelerator, clutch and brake.

  Incorporated signal smoothening and post-processing algorithms for sensorial data via MATLAB; fail-safe algorithm for robustness

## RELEVANT COURSES & SKILLS

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|---|---|---|
| Introduction to Data Analytics | Data Structures and Algorithms | Linear Algebra |
| Machine Learning | Deep Learning, Computer Vision | Probability and statistics |

**Programming Languages & Software:** R, Python, TensorFlow, Keras , R, C++