

Deepak Kumar Singh

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EDUCATION

- **International Institute of Information Technology**

Hyderabad, India

MS by Research in CSE; GPA : 7.33/10.0

Aug. 2018 – June. 2021

- **Rajarajeswari College of Engineering**

Bengaluru, India

Bachelor of Engineering in CSE; Percentage : 73%

Aug. 2010 – June. 2014

EXPERIENCE

- **Celstream Systems Pvt. Ltd.**

Bangalore

Software Engineer - Full time

Sept 2014 - Sept 2016

- Built the product's main UI Console on JavaScript environment for better accessibility.
- Developed modules using IgniteUI Library to create dynamic data-visualization modules.
- Developed data-adapters for live data-visualization modules.
- Implemented libraries for multiple custom window management.
- Migrated the in-house application from Adobe Flash environment to JavaScript environment.
- Restructured the modules to work in JavaScript environment.
- Developed REST APIs in Java.

PROGRAMMING SKILLS

- **Languages:** Python, Java, JavaScript, C, C++
- **Technologies and Frameworks:** PyTorch, TensorFlow, Android Studio, Processing, jQuery

RESEARCH WORK

- **Semi-supervised Learning on Semantic Segmentation**

IIIT Hyderabad, India

Jan 2019 - Present

Currently pursuing MS by Research at the Centre for Visual Information Technology(CVIT), IIIT Hyderabad, advised by Prof. C V Jawahar. My current research work is focused on improving semantic segmentation models by utilizing the representations through semi-supervised learning approaches.

COURSE WORK

- **MS by Research**

IIIT Hyderabad, India

Aug 2018 - Dec 2019

- | | | |
|----------------------------------|-----------------------------|-------------------|
| ◦ Digital Image Processing | ◦ Statistical Methods in AI | ◦ Computer Vision |
| ◦ Topics in Applied Optimization | ◦ Optimization Methods | ◦ Mobile Robotics |

MOOCs

- **Coursera**

Aug 2016 - Present

- | | | |
|------------------------------------|-----------------------------|---|
| ◦ Neural Networks and DeepLearning | ◦ CNNs | ◦ Probabilistic Graphical Modeling(Ongoing) |
| ◦ Improving Deep Neural Networks | ◦ Structuring ML Projects | ◦ Bayesian Statistics(Ongoing) |
| | ◦ Linear Algebra 18.06, MIT | |

PROJECTS

- **Semantic Segmentation:** Benchmarking of various semantic segmentation models on popular datasets like Cityscapes, PASCAL VOC, ADE20K and IDD.
- **Self-Training:** A semi-supervised technique on MNIST digits dataset as a proof-of-concept whether a classification model can be improved using Self-Training approach.
- **Principal Component Analysis and Naive Bayes Classifier on face images:** PCA was used to get reduced dimension images for faster and efficient classification. PCA was followed by two methods to perform classification namely, gradient descent method using the cross entropy loss, a Naive Bayes classifier using the Bayes's theorem to determine the probability of classification.
- **Classification on CIFAR-10:** Developed a classifier on various data representations like PCA, LDA, Raw data. Various classifiers were used including Softmargin Linear SVM, MLP, Kernel SVM with RBF-Kernel and Logistic Regression.
- **Contrast Based Filtering for Salient Region Detection [Link]:** Image decomposed into basic, structurally representative elements that abstract away unnecessary detail, and at the same time allow for a very clear and intuitive definition of contrast-based saliency.
- **Oriented Edge Forests for Boundary Detection [Link]:** Efficient model for learning boundary detection based on a random forest classifier. Boundary detector consists of a decision forest that analyzes local patches and outputs probability distributions over the space of oriented edges passing through the patch. This space is indexed by orientation and signed distance to the edge ($d; \theta$). These local predictions are calibrated and fused over an image pyramid to yield a final oriented boundary map

OTHER ROLES

- **GPU Cluster Moderator:** Responsible for maintaining a smooth operation of 62 GPUs cluster using SLURM with various requirements of resource allocation policies, reservation policies, data storage, task management and day-to-day management of optimal usage of the cluster.

EXTRACURRICULARS

- **Winner** - 5k Marathon 2018
- **Winner** - Intramural PG Volleyball 2018