Nithish Divakar

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Education

Indian Institute of Science, Bangalore August 2013 to June 2015

- Masters degree in Computational Science (M-Tech)
- Master's thesis: *Accelerating Image Denoising using GPUs*
- The thesis work has been published in SPCOM-2016 [2]
- CGPA: 6/8

Govt. Engineering College, Idukki, Kerala August 2009 to June 2013

- Bachelors degree in Computer Science (B-Tech)
- Thesis Project: *Pose Estimation through analytical Geodesic Search*
- Percent: 74.5%

Work Experience

R&D Engineer, Cogknit Semantics, Bangalore September 2017 to Present

- Worked on *Access.ai*, a contextual description generating system for commercial videos [3]

PhD candidate at Video Analytics Lab, IISc Bangalore August 2016 to June 2017

- Worked on Image Reconstruction Using Deep Learning Technologies.

Project Assistant at Video Analytics Lab, IISc Bangalore August 2015 to July 2016

- Worked on *Image Reconstruction* using *Deep Learning* techniques.
- Ref: *Image Denosing using Generative Adversarial Networks*, published in CVPR-2017 Workshop [1]

Projects

Access.ai [3]

- A contextual description generating system for videos.
- Involves extracting context through visual description, scene text extraction and speech recognition.
- Used a custom designed solution for image description.

Image Denoising using Generative Adversarial Networks [1]

- Developed a Deep Learning method which utilised Generative Adversarial Networks (GAN) for Image Denoising
- The models were fully designed and trained from scratch. The work has been published in CVPR-2017 workshop [1]

Accelerating Image Denoising using GPUs [2]

· Developed a GPU friendly approximation algorithm to substitute computationally intensive block matching
· Achieved 100x speedup with little loss in denoising performance. The work has been published SPCOM-2016 [2]

Implementing Primal-Dual Affine Scaling for GPUs [4]

· Primal dual affine scaling is an interior point optimisation technique like simplex method.
· Developed a memory efficient implementation of this method tailor made for GPUs. Done as part of a course project.

Pose Estimation through analytical Geodesic Search

· Implemented a pose estimation algorithm which determines pose of a object from a single 2D image

Others

· "Image Denoising using Generative Adversarial Networks" and "Accelerating Image Denoising using GPUs" were both part of ISRO Space Technology Cell funded project
· Accelerating Weighted Nuclear Norm based Image denoising: Was able to get 10x speedup (MTech)
· Built a full scaled Attendance management system for college with a focus on little manual input requirements (Btech)

Technical Skills

Primary languages Have used **python** and **C** as primary languages for coding. Also have successfully made several small hobby projects(please check github repo). Have used python as a primary language for machine learning projects.

TensorFlow Have built and trained entire deep learning model from scratch. Have very good working knowledge and even took a workshop on using this API for machine learning.

Keras Have designed and implemented a full working deep learning model in this framework. Also have some minor contribution to the official repository.

OpenCV Have first hand knowledge from extensive use in a *Access.ai* [3].

Other Have some basic knowledge of *javascript*.

Publications

Conferences

[1] Nithish Divakar and R Venkatesh Babu. "Image Denoising: and Adversarial approach". In: *CVPR workshop on New Trends in Image Restoration and Enhancement*. IEEE. 2017.

[2] Nithish Divakar and R Venkatesh Babu. "Denoising in a Jiffy: A fast and GPU friendly algorithm for image denoising". In: *International Conferences on Signal Processing and Communications (SPCOM)*. IEEE. 2016.

ArXiv

[4] Nithish Divakar. "Primal Dual Affine Scaling on GPUs". In: *arXiv preprint arXiv:1502.03543* (2015).