Shubham Innani

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Education

2016–2020 **Bachelor of Technology**, *Department of Electronics and Telecommunication Engineering*, *Shri Guru Gobind Singhji Institute of Engineering and Technology, Nanded*, Maharashtra - India.

2014–2016 **Higher Secondary Certificate**, *S.S.D. Junior College, Hingoli*, Maharashtra - India.

2001–2014 **Secondary School Certificate**, *Mount Carmel High School, Washim*, Maharashtra - India.

Experience

July 2022 - Present **Research Intern**, *Center for Biomedical Image Computing and Analytics (CBICA), University of Pennsylvania*, Philadelphia, United States of America.

January 2021- July 2022 **Assistant System Engineer**, *Tata Consultancy Services*, Pune, India.

March 2020- June 2020 **Data Science Intern**, *Nymo.ai*, Bangalore, India.

Awards and Accomplishment

2019 1^{st} Prize in Semantic Segmentation Challenge on IDD lite dataset organized at National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG),India, by IIIT Hyderabad, India and Intel, India.

2019 Travel Grant awarded to attend National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG).

2019 Participated in AutoNUE Workshop Challenge organized at International Conference on Computer Vision (ICCV), Korea.

2020 Poster Presentation at IEEE Conference on Computer Vision and Pattern Recognition (CVPR) in Agriculture Vision Workshop,.

2020 Participated in Agriculture Vision Prize Challenge at Computer Vision and Pattern Recognition (CVPR).

2020 Participated in Age Related Macular Degeneration(AMD) challenge at IEEE International Symposium on Biomedical Imaging (ISBI) and ranked in top 10.

2020 Participated in Retinal Fundus Glaucoma Challenge Edition2 (REFUGE2) challenge at MICCAI, ranked in top 10.

2020 2^{nd} Prize in Semantic Segmentation Challenge on IDD dataset organized at Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP) at IIT Jodhpur, by IIIT Hyderabad, and Intel, India.

Publication

Baheti B, **Innani S**, Gajre S, Talbar S. Eff-UNet: A Novel Architecture for Semantic Segmentation in Unstructured Environment. 2020 IEEE CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), Seattle, WA, USA, 2020, pp. 1473-1481, doi: 10.1109/CVPRW50498.2020.00187.

Innani, S., Dutande, P., Baheti, B., Talbar, S., and Baid, U. Fuse-PN: A Novel Architecture for Anomaly Pattern Segmentation in Aerial Agricultural Images. In Proceedings of the IEEE CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops(2021)(pp. 2960-2968).

Bhakti Baheti, **Shubham Innani**, Suhas Gajre, Sanjay Talbar. Semantic scene segmentation in unstructured environment with modified DeepLabV3+. Elsevier Pattern Recognition Letters, Volume 138, 2020, Pages 223-229, ISSN 0167-8655,doi: 10.1016/j.patrec.2020.07.029.

Chiu MT, Xu X, Wang K, Hobbs J, Hovakimyan N, Huang TS, Shi H, Wei Y, Huang Z, Schwing A, Brunner R., Andrew Ng, Ujjwal Baid, **Shubham Innani**, Prasad Dutande, Bhakti Baheti, Sanjay Talbar and others. The 1st Agriculture-Vision Challenge: Methods and Results. 2020 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW), Seattle, WA, USA, 2020, pp. 212-218, doi: 10.1109/CVPRW50498.2020.00032.

Fang H, Li F, Fu H, Sun X, Cao X, Lin F, Son J, Kim S, Quellec G, Matta S, Shankaranarayana SM, Ujjwal B, **Shubham I** and others, ADAM Challenge: Detecting Age-related Macular Degeneration from Fundus Images, in IEEE Transactions on Medical Imaging, doi: 10.1109/TMI.2022.3172773.

Fang H, Li F, Fu H, Sun X, Cao X, Son J, Yu S, Zhang M, Yuan C, Bian C, Lei B., Ujjwal B, **Shubham I** and others, REFUGE2 Challenge: Treasure for Multi-Domain Learning in Glaucoma Assessment. arXiv preprint arXiv:2202.08994. 2022 Feb 18. (Under review at Medical Image Analysis, Elsevier).

Projects

- **Semantic Scene Segmentation in Unstructured Environment (AUTONUE Challenge, ICCV 2019 & NCVPRIPG Challenge 2019 & ICVGIP Challenge 2020)**
  Encoder-Decoder architecture is developed for semantic scene segmentation in unstructured environment with various backbones like InceptionResNetV2, EfficientNets using Deep Learning on Indian Driving Dataset (IDD) and IDD lite.

- **Age Related Macular Degeneration (AMD Challenge, ISBI 2020)**
  Development of algorithms associated with the diagnosis of Age-related Macular degeneration (AMD) and segmentation of lesions in fundus photos from AMD patients with Convolutional Neural Networks.
- **Anamoly Pattern Segmentation in Agriculture(Agriculture Vision Challenge, CVPRW 2020)**
  Novel and effective algorithms is developed for agricultural pattern recognition from aerial images using Feature Pyramid Network as encoder and varying the decoder backbones.
- **Skin lesion Segmentation and Classification (ISIC Challenge, MICCAI 2018)**
  Generative Adversarial Network based architecture is developed for skin lesion segmentation and classification with Convolutional Neural Network. The classification task is carried out with state-of-the-art networks like ResNets, MobileNets, Xception, EfficientNets.
- **Retinal Fundus Glaucoma Analysis (REFUGE2 Challenge, MICCAI 2020)**
  Algorithm for Retinal Fundus Glaucoma Analysis with segmentation of optic disc and cup, classification of glaucoma and localization of fovea is being developed. We leverage the power of Efficientnets and Unet for all the tasks.
- **Automatic Number Plate Recognition**
  Focus was on the development of novel and realtime algorithms for Automatic Number Plate Recognition. This algorithm implements end-to-end You Only Look Once (YOLO) based object detector and Mask-RCNN based Region Proposal Network.
- **Prognostic Stratification of Glioblastoma**
  Focus is to develop computational algorithm from Digital H&E Stained Histopathology Images to derive the driving decision of Long and Short Survivals in Brain Tumor Patients using Weakly Supervised Approach.

Knowledge Area

Networks	Convolutional Neural Network (CNN), Segmentation Models, CNN based classification models, Object detection models, Generative Adversarial Networks (GAN)
Libraries	Keras, Tensorflow, Numpy, Pandas, Pytesseract, Scikit-Learn, Scikit-Image, Openslide, Pytorch (Beginner)
Outros	Python, C, Colab, GPU, SCRUM, SPRINT

Services

Reviewer	IEEE Transaction in Medical Imaging
Reviewer	Nature Scientific Reports
Reviewer	IEEE Computer Vision and Pattern Recognition (Workshops)

Certifications

Deep Learning Specialization by deeplearning.ai on Coursera by Andrew Ng

AI for Medicine on Coursera

Neural Networks and Deep Learning by deeplearning.ai on Coursera

Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization by deeplearning.ai on Coursera

Structuring Machine Learning Projects by deeplearning.ai on Coursera

Convolutional Neural Networks by deeplearning.ai on Coursera

Sequence Models by deeplearning.ai on Coursera

Convolutional Neural Networks in TensorFlow by deeplearning.ai on Coursera

Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning by deeplearning.ai on Coursera

Deep Neural Networks with PyTorch on Coursera

About me

I aim to work in an organization with research-based opportunities where I can utilize my skills to achieve the organization's objective and grow personally and professionally. Despite the short period of experience in the research sector, I have interest willingness to learn new things.

Personal Details

Date of Birth	8^{th} September 1998
LinkedIn	https://www.linkedin.com/in/shubhaminnani
GitHub	https://github.com/shubhaminnani
Google Scholar	https://scholar.google.com/citations?user=Aw0CjT8AAAAJ&hl=en

Name: Shubham Innani Place: Philadelphia, PA, USA Date: 24^{th} December, 2022