Divyansh Jha

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EDUCATION

Guru Gobind Singh Indraprastha University, *New Delhi, India*
Bachelor of Technology, Electronics and Communication Engineering, CGPA: 8.37 / 10.00 *August. 2015 – May. 2019*
Coursework: Applied Mathematics I-IV, Data Structures and Algorithms, DBMS, Computer Networks, Digital Signal Processing, Embedded Systems, Information Theory and Coding, Digital Image Processing

EXPERIENCE

The University of Texas at Austin, *Austin, Texas*
Visiting Researcher (Remote), working with Dr. Yuke Zhu (Asst. Prof. in Department of Computer Science) *Jan. 2021 – .*
- Working on integrating the iGibson renderer to Robosuite for robot learning.

King Abdullah University of Science and Technology (KAUST), *Thuwal, Saudi Arabia*
Research Intern (Remote) with Dr. Mohamed Elhoseiny (Asst. Prof. of CS at KAUST) *Feb. 2020 – .*
- Worked on creative art generation and zero shot learning. The resultant paper is under review at ICCV 2021. [Paper]
- Worked on art generation interpretability and analysis. The paper is under review at ICCC 2021.

Esri R&D Center, *New Delhi, India*
Data Scientist II @EsriR&D, previously Deep Learning Intern (till May 2019) *May. 2018 – .*
- Added deep learning models to the learn module of the ArcGIS API for Python which lets GIS analysts and data scientists to train and deploy deep learning models on their data in few lines of code within the ArcGIS platform.
- Developed and assisted in addition of models for Image Classification, Object Detection(SSD, RetinaNet), Pixel Classification(U-net, PSPNet), Instance Segmentation(Mask-RCNN) and Point Cloud Segmentation(PointCNN), Image Captioning, Image Inpainting (PConv), Image Translation (CycleGAN and Pix2PixHD) and Change Detection (STANet) in PyTorch.
- Developed various demos which were presented in various Esri user conferences (UC) and developer summits (DS) in the plenary sessions. [Esri UC 2018] [Esri DS 2019] [Esri UC 2019] [Esri DS 2020] [Esri UC 2020]

RESEARCH PROJECTS

Paper Implementation: Semantic Image Synthesis with Spatially-Adaptive Normalization [Project | Blog] *-May 2019*
- Implemented SPADE Normalization block for the generator and discriminator networks in PyTorch.
- Implemented perceptual, feature matching and hinge loss for training the GAN and integrated it with fastai framework.
- Trained the network on Chesapeake bay land cover data to generate satellite imagery from corresponding land cover.

Journal Publication: Self-Attention Based Visual Dialogue [Paper | Blog] *-Jan 2019*
- Implemented the self-attention module from the SAGAN paper and integrated it with Late-Fusion Encoder of the visual dialogue model which improved the recall and mean reciprocal rank on the visdial v0.9 validation set.
- Used the Visual Dialogue challenge starter code to train the modified model.

Side Project: Generative Adversarial Networks(GAN) Comparisons on MNIST [Project] *-Apr. 2018*
- Implemented the generator and discriminator networks using linear layers in PyTorch and TensorFlow and compared the Vanilla GAN loss function with Least-Square GAN and Wasserstein GAN — gradient penalty(WGAN-GP) loss functions.
- Implemented a Deep Convolutional GAN (DCGAN) with Least-Square GAN loss which had the best results.

Side Project: Image Captioning [Project] *-Mar. 2018*
- Implemented the forward pass and backward pass of Vanilla RNN and LSTM in NumPy to train the captioning model.
- Used pre-downloaded VGG16 features from COCO images as input to the recurrent network for it to generate the caption.

SKILLS AND AWARDS

Languages: Excellent in Python; Proficient in C/C++ , R, SQL, Ruby, JavaScript, HTML/CSS and Shell.
Frameworks: PyTorch, fastai, torch-geometric, TensorFlow, Keras, Pandas, OpenCV, ArcGIS, scikit-learn, gym, Rails, Flask.
Research Interests: Intersection of Computer Vision and Natural Language Processing, Generative Modeling, 3D Computer Vision, Few/Zero Shot learning, Robotics, Deep Learning for GIS.
Awards & Achievements: Intel Early Innovation research grant of $5000 (*Jun 2018*), 7th in ZS Young Data Science Challenge 2018, 4th in NSIT Fintech Hackathon 2018, Finalist Smart India Hackathon 2018, Best in academics (INR 11k) (*Oct. 2015*)

COMMUNITY WORK

Blogs: Implementing SPADE using fastai [Link], Swimming pool detection and classification using deep learning [Link], Not just another GAN paper — SAGAN [Link], Tackling Adversarial Examples : Introspective CNN [Link].
Intel Student Ambassador for AI: Organized Intel Sponsored meetups highlighting Intel optimized deep learning hardware. Presented and held workshops at colleges encouraging students to learn AI and deep learning. (*Dec. 2017 - *) [Intel Blog]
AI Saturdays Delhi Chapter Ambassador: Organized over 20 meetups in two cycles of AI Saturdays covering various deep learning courses like Stanford's CS231n and CS224n, fast.ai etc. (*Dec. 2017 - Dec. 2018*) [Press]