RAJIV KUMAR V

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EDUCATION

Indian Institute of Technology, Bombay	Dec 2016 - Present	Phd GPA: 7.71/10
National Institute of Technology, Hamirp	ur Aug 2013 - July 2015	M.Tech GPA: 7.84/10
College of Engineering, Chengannur	Aug 2008 - Nov 2012	B.Tech GPA: 66.55/100
Mar Thoma HSS, Kottayam	2006 - 2008	12th GPA: 93.5/100
Chinmaya Vidyalaya, Kunnumpuram	2006	10th GPA: 89.17/100

TECHNICAL STRENGTHS

Programming Languages ML and DL Experience DL Experience(single 1080Ti CUDA Machine) Python/Pytorch, C/C++, Java, MATLAB 2000+ Hours 7000+ Hours

PAPER & PUBLICATIONS

VISAPP 2021 Learning Unsupervised Cross-domain Image-to-Image Translation using a Shared Discriminator

- · Achieved SoTA quantitative results on A2O in image transfiguration, a cross-domain translation task.
- · Proposed a shared discriminator between two GANs, improving the overall efficacy of I2I translation.
- $\cdot\,$ Devised a novel application of image pools for reusing generated images and a two-stage training process.

VISAPP 2022 An Overview Of Object Detection and Instance Segmentation Methods On Check-Dams Using Satellite Imagery

- · Introduced a new dataset for check dams using aerial imagery from static Google Maps.
- \cdot Reviewed and analysed several recent object detection and instance segmentation algorithms on the new dataset.

WORK IN PROGRESS

In progress

Learning a Shared One Shot Model For Multi-Class Image Generation

- · Developed a method for one shot multi-class image synthesis by learning from a single image of a class.
- · Handled mode collapse using a mode-seeking loss, resulting in non-trivial semantically correct variations.

In progress

Learning One-shot Image Compositing and Image blending

- · Developed a novel method for image compositing and image blending from two or more images.
- · Generated all modes in the initial stages, followed by translating the images in the intermediary stages.
- · Composited images are constructed with the patches from the input images and blended appropriately.

In progress Few-Shot Handwritten Character Synthesis Using a Pyramid Of GANs for Data augmentation

- $\cdot\,$ Developed a method using a pyramid of GANs to generate handwritten character images.
- \cdot Learned sensible variations from few data samples to generate hundreds of data samples.
- · Robust to corrupt training data and extensible for one-shot image synthesis by data augmentation.

In progress (collaboration) Large Scale Minor Irrigation Structures Dataset for Object detection by Source Free Semi-supervised Domain Adaptation

- \cdot Large scale(50K+) semi-supervised dataset of irrigation structures using Google maps imagery
- $\cdot\,$ Task of knowledge transfer from multiple source models to target domain without access to source data

In progress (collaboration) DI-UNet:Dual-Input UNet to Derive Resistivity from SAR Data

- $\cdot\,$ Assessed the correlation between surface resistivity and SAR by applying image segmentation methods
- $\cdot\,$ Introduced DI-Unet, a novel Double input branch encoder with shared decoder architecture

COURSE PROJECTS & SEMINAR

Automatic Speech Recognition

- \cdot Generated spectrograms and filtered it for features extraction for bird call classification.
- \cdot Applied random forests and clustering techniques for training and feature extraction.

Foundations of Machine Learning

- \cdot Modelled the stochastic agent by LSTM using the state variables from the game at any instant.
- · Resulted in an intelligent agent by recording tens of thousands of game episodes of different outcomes.

PROJECT EXPERIENCE

Indian Institute of Technology, BombayResearch Scholar under Prof. G. SivakumarA generative approach to Transfer learning in Lifelong learning setting

 \cdot Worked extensively on I2I translation, few shot learning, domain adaptation, domain transfer, transfer learning, lifelong-learning, etc. using generative models like GANs and VAEs.

National Institute of Technology, HamirpurMasters under Asso. Prof. Nitin GuptaA parallel implementation for Protein Structure alignment

- · Investigated protein structure algorithms and their time complexities on CATH, FSSP, and SCOP.
- · Developed parallel DALI to perform protein structure alignment based on inter residue matrices.
- · A speedup on a factor of 20X was achieved by calculating the score for pre-alignment on CUDA.

College of Engineering, ChengannurUG Project under Asso. Prof. G. GopakumarArtificial Eye using QR codes

- · Implemented a wearable augmented device for blind people by capturing real time images.
- $\cdot\,$ Decoded information from QR codes was converted into speech using text to speech libraries.

TEACHING EXPERIENCE

Colleges Vidya Academy of Science and Technology, Thrissur Cochin College of Engg. & Technology, Malappuram College of Engineering, Kottarakkara

ACADEMIC ACHIEVEMENTS

AIR 663 (out of 108495 appeared) in GATE 2016, AIR 1303 (out of 224160 appeared) in GATE 2013. School Topper in 12th, Mar Thoma HSS, Kottayam, Board of Kerala State HSS in 2008.

EXTRA-CURRICULAR

Served as a reviewer for 10+ paper submissions in ML and Vision conferences like WACV, ECML, etc. Chief Editor and designer for college technical magazine Breakthrough '12 during UG studies.

Position Assistant Professor Assistant Professor Contract Lecturer

Half Field Offense

MLSP Bird Classification Challenge