Arghya PAL
Deep Learning | Computer Vision | Generative Models

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Training data is playing an increasingly important role in defining the performance of modern machine learning systems. Our aim is to learn the joint distribution $P(X, y) : X$ being the data, and y being the label, to facilitate a supervised learning. However, we encounter few types of circumstances those can be introduced by unaccounted phenomena in the real world in learning $P(X, y)$, and ways to answer those odds. My thesis work spans over two broad research objectives :

> **Learning under limited supervision** to escape the bottleneck of massive sets of hand-labeled training data.
> **Learning a generic vision task without any data** but from a set of related vision (source) tasks.

Happy to share that there are publications in different Computer Vision and Machine Learning venues, such as : CVPR, IROS, WACV etc., to support my proposal.

ACADEMIC PREPARATION

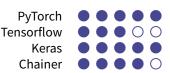|	
2020 - Till Date	External PostDoc Student, Mentor : Prof. Raphael Phang, Dept. of Computer Science & Engineering, Monash University
2020 - Till Date	External PostDoc Student, Mentor : Prof. Yogesh Rathi, School of Mathematical Computing, Harvad University
2015 - 2020	Doctor of Philosophy Ph.D., Thesis :"**Beyond Full Supervision** Alternate Perspectives toLearning with Limited Supervision in Deep NeuralNetwork Models", Advisor : Dr. Vineeth N Balasubramanian, Dept. of Computer Science & Engineering, Indian Institute of Technology Hyderabad, India, Research Excellence Award 2019, GPA : 8.6/10 (relative grading)
2013 - 2015	Master of Technology, Dept. of Computer Science & Technology, Goa University, Goa, India, University Gold Medalist

RECOGNITION & AWARDS

2021	Doctoral Consortium, selected in **WACV 2021**
2020	Doctoral Consortium, selected in **CVPR 2020 VIRTUAL**
2019	Google Travel Grant to present paper in **CVPR 2019**
2019	Research Excellence Award awarded by Indian Institute of Technology Hyderabad (IITH)
2018	Microsoft Research India Travel Grant to present paper in **CVPR 2018**
2016	Selected to attend the International Computer Vision Summer School at Sicily
2016	Selected for SAKURA Science Indo-JAPAN internship program in The University of Tokyo (UTokyo)
2016	Recipient of Intel India Ph.D Fellowship Duration : 5yrs
2015	Recipient of Visvesvaraya Project Fellowship awarded by Dept. of Electronics and Information Technology, Govt. of India, India Duration : 1yr (2015-2016 (August))
2015	University Gold Medalist, Goa University, Dept. of CST
2013	Goa Government Merit Scholarship awarded by Govt. of Goa Duration : 2yrs

☰ Publications

> Arghya Pal, R Phang, W K shaikh, Synthesize-It-Classifier (STIC), accepted in CVPR 2021.

> Arghya Pal, and Vineeth N. Balasubramanian. Guess-It-Generator (GIG), *Under Review*.

> **Book Chapter**; Cahpter 13 : Zero-shot task transfer, in *Domain Adaptation in Computer Vision with Deep Learning*, Authors (editors) : Hemanth Venkateswara and Sethuraman Panchanathan, Publisher : Springer Nature, ISBN 978-3-030-45528-6.

> Arghya Pal and Vineeth N Balasubramanian. Generative adversarial data programming. *arXiv preprint arXiv :2005.00364*, 2020

> Arghya Pal and Vineeth N Balasubramanian. Zero-shot task transfer. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, pages 2189–2198, 2019

> Arghya Pal and Vineeth N Balasubramanian. Adversarial data programming : Using gans to relax the bottleneck of curated labeled data. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, pages 1556–1565, 2018

> KJ Joseph, Arghya Pal, Sailaja Rajanala, and Vineeth N Balasubramanian. C4synth : Cross-caption cycle-consistent text-to-image synthesis. In *2019 IEEE Winter Conference on Applications of Computer Vision (WACV)*, pages 358–366. IEEE, 2019

> Dhaivat Bhatt, Danish Sodhi, Arghya Pal, Vineeth Balasubramanian, and Madhava Krishna. Have i reached the intersection : A deep learning-based approach for intersection detection from monocular cameras. In *2017 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 4495–4500. IEEE, 2017

> Arghya Pal, BK Khonglah, S Mandal, Himakshi Choudhury, SRM Prasanna, HL Rufiner, and Vineeth N Balasubramanian. On-line bengali handwritten numerals recognition using deep autoencoders. In *2016 Twenty Second National Conference on Communication (NCC)*, pages 1–6. IEEE, 2016

> Arghya Pal and JD Pawar. Recognition of online handwritten bangla characters using hierarchical system with denoising autoencoders. In *2015 International Conference on Computation of Power, Energy, Information and Communication (ICCPEIC)*, pages 0047–0051. IEEE, 2015

> A. Pal. Bengali handwritten numeric character recognition using denoising autoencoders. In *2015 IEEE International Conference on Engineering and Technology (ICETECH)*, pages 1–6, 2015

� Python Skill

PyTorch	●●●●●
Tensorflow	●●●○○
Keras	●●●●●
Chainer	●●●●○

✚ Other Skills

> MatLab
> Caffe
> Lua based Torch
> OS : Ubuntu, MAC

💼 Academic Projects

CVPR 2019	**Oral Paper (2-3% acceptance) | Zero-Shot Task Transfer,** - Mentor : Vineeth N Balasubramanian, Gist of the work : > Tasks are related in meta-manifold space > A novel meta-learning algorithm, i.e. TTNet, that regresses model parameters for novel tasks for which no ground truth is available (zero-shot tasks) > Meta-learner learns from the model parameters of known tasks (with ground truth) and the correlation of known tasks to zero-shot tasks Keywords : Meta Learning Representational Learning Explainibility in Meta Space
CVPR 2018	**Poster Paper (28% acceptance) | Adversarial Data Programming,** - Mentor : Vineeth N Balasubramanian, Gist of the work : > Getting labeled-data training data is a bottleneck > An adversarial methodology (Generative Adversarial Network GAN) to generate data as well as a curated aggregated label has given a set of weak labeling functions > Framework can be used for transfer learning as well as multi-task learning, where data from two domains are generated simultaneously using the framework along with the label information Keywords : Joint Distributional GAN GAN as Parameter Estimator Representational Learning Transfer Learning

WACV **2019**	Oral (Accept Rate 25%) | C4Synth : Cross-Caption Cycle-Consistent Text-to-Image Synth, - Mentor : Vineeth N Balasubramanian, Gist of the work : > Text to Image synthesis by making use of multiple captions describing it. > A Generative Adversarial framework that ensures "Cross-Caption Cycle Consistency" between the multiple captions and the generated image(s). > By inducing a recurrent structure that removes the limitation of number of captions on the architecture Keywords : Text to Image Synthesis Cross Caption Cycle Consistency Recurrent Version of GAN

🖳 Academic Services

NeurIPS Reviewer, Conference Link 2020

CVPR Reviewer, Conference Link 2020

IJCAI Reviewer, Conference Link 2020

ICVGIP Reviewer, Conference Link 2018, 2016

NCC Reviewer, Conference Link 2018, 2017, 2016

IJCAI Sub-reviewer 2018, 2017

ICCV Sub-reviewer 2018, 2017

🖳 Non Academic Services

Department Representative, Dept of CSE, IIT Hyderabad 2016 - 2017

Webmaster, Reserach Scholar Portal, IIT Hyderabad 2016

System Admin, ML group servers, PI : Vineeth N Balasubramanian 2015 - till date

❝ Internships

Intel Indoa, @ Innovation Lab, Mentor : Omer Om J, 2020

Tata Consultency Services, @ Innovation Lab, Adviser : Dr. Jay Gubbi, 2020

AIST Japan, @ AIRC LAB, Adviser : Dr. Hirodiko Sakanashi, 2019

Adobe Noida, 2018

The University of Tokyo, Japan, @ Machine Intelligence Lab, Adviser : Prof. Tatsuya Harada, 2016

Indian Institute of Technology Madras, @ RISE Lab, Advisers : Prof. Balaram Ravindran & Dr. Kaushik Mitra, 2016

Indian Institute of Technology Guwahati, @ Signal Informatics Lab, Advisers : Prof. SRM Prasanna, 2014-2015

❝ References

Vineeth N Balasubramanian
🏠 Head of the Department
 Department of Artificial Intelligence
 Indian Institute of Technology Hyderabad, India
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Prof. Raphael Phang

🏠 Professor
Department Of Computer Science, Engineering and Cryptography
Monash University

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Srijith PK

🏠 Assistant Professor
Department of Computer Science & Engineering
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Vinay P. Namboodiri

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Indian Institute of Technology Kanpur

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Venkatesh Vinayak Kamat

🏠 Professor
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Goa University

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