

Rahul Duggal

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EDUCATION	Georgia Institute of Technology , College of Computing 2018 – 2022 <ul style="list-style-type: none">▪ Ph.D. in Computer Science (GPA : 4.0/4.0)
	University of Delhi , Netaji Subhas Institute of Technology, India 2011 – 2015 <ul style="list-style-type: none">▪ Bachelors (B.E.) in Computer Engineering (GPA : 3.5/4.0)
PROFESSIONAL EXPERIENCE	Applied Scientist II, Amazon (AWS-AI Computer Vision) Oct 2022 – Present <ul style="list-style-type: none">▪ Researching and developing novel computer vision algorithms for diverse applications.
	Research Intern, Amazon (AWS-AI Computer Vision) May 2021 – Aug 2021 <ul style="list-style-type: none">▪ Developed a novel architecture search method for designing regression-free models suited to diverse compute platforms.
	Research Intern, Amazon (AWS Rekognition) May 2020 – Nov 2020 <ul style="list-style-type: none">▪ Developed a novel neural architecture search method for open set, image retrieval applications such as fashion retrieval and face recognition.
	Software Developer, Epic Systems , Madison, WI, USA Oct 2017 – Jun 2018 <ul style="list-style-type: none">▪ Developed software for scheduling and documenting surgery time procedures.
	Research Assistant, SBILab at IIIT-Delhi , India [Lab Page] Jan 2016 – Sep 2017 <ul style="list-style-type: none">▪ Researched computer vision methods to diagnose Leukemia from medical images.
WORKING PAPERS	<p>[1] R Duggal, S. Peng, H. Zhou, P.Chau, “IMBNAS: Neural Architecture Search on Imbalanced Datasets”, In submission 2022.</p> <p>[2] H. Park, S. Lee, B. Hoover, A. Wright, O. Shaikh, R. Duggal, N. Das, J. Hoffman, P. Chau, “ConceptEvo: Interpreting Concept Evolution in Deep Learning Training”, In submission 2022.</p>
SELECTED PUBLICATIONS	<p>[11] R Duggal, H. Zhou, J. Fang, S. Yang, Y. Xiong, W. Xia, “Towards Regression-Free Neural Networks for Diverse Compute Platform”, European Conference on Computer Vision (ECCV), Israel, 2022.</p> <p>[10] S.Freitas, R. Duggal, P. Chau, “MalNet: A Large-Scale Cybersecurity Image Database of Malicious Software”, IEEE International Conference on Information and Knowledge Management (CIKM), USA, 2022.</p> <p>[9] R Duggal, H. Zhou, S. Yang, Y. Xiong, W. Xia, Z. Tu, S. Soatto “Compatibility-aware Heterogeneous Visual Search”, IEEE Computer Vision and Pattern Recognition (CVPR), USA, 2021. [Paper]</p> <p>[8] R Duggal, S. Freitas, S. Dhamnani, P. Chau, J. Sun, “HAR: Hardness Aware Reweighting for Imbalanced Datasets”, IEEE International Conference on Big Data (BigData), USA, 2021. , [paper]</p> <p>[7] R Duggal, C Xiao, R. Vuduc, P. Chau, J. Sun, “CUP: Cluster Pruning for Compressing Deep Neural Networks”, IEEE International Conference on Big Data (BigData), USA, 2021. [paper]</p> <p>[6] H Park, N. Das, R Duggal, A. Wright, O.Shaikh, F. Hohman, P. Chau “NeuroCartography: Scalable Automatic Visual Summarization of Concepts in Deep Neural Networks”, IEEE Transactions on Visualization and Computer Graphics (TVCG), IF: 4.5 2021, [Paper]</p>

- [5] R Duggal*, S. Freitas*, C. Xiao, D.H. Chau, J. Sun, “**REST: Robust and Efficient Neural Networks for Sleep Staging in the Wild**”, The World Wide Web Conference (WWW), Taiwan, 2020. [[Paper](#)][[Code](#)]
- [4] A. Gupta, R Duggal, S.Gehlot, R. Gupta, A. Mangal, L. Kumar, N. Thakkar, D. Satpathy “**GCTI-SN: geometry-inspired chemical and tissue invariant stain normalization of microscopic medical images**”, Medical Image Analysis (IF: 11.1) 2020. [[Paper](#)]
- [3] A Gupta, P. Mallick, O.Sharma, R. Gupta, R Duggal “**PCSeg: Color model driven probabilistic multiphase level set based tool for plasma cell segmentation in multiple myeloma**”, PLoS one (IF: 3.24) 2018. [[Paper](#)]
- [2] R Duggal, A Gupta, et al, “**SD-Layer: Stain Deconvolutional layer for CNNs in Medical Microscopic Imaging**”, 20th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), Canada, 2017. [[Paper](#)][[Code](#)]
- [1] R Duggal, A Gupta, “**P-TELU: Parametric Tan Hyperbolic Linear Unit Activation for Deep Neural Networks**”, International Conference on Computer Vision (ICCV) Workshops, 2017 [[Paper](#)]

SERVICE

Teaching Assistantship

- Graduate Deep Learning (CS 7643) with Prof. Zsolt Kira (Spring 2020, Spring 2021)

Program Committee Member / Reviewer

- CVPR 2021, 2022
- ECML-PKDD 2022
- ICCV 2021
- ICLR 2019
- ICML 2019
- KDD 2020, 2021

PRESS

- [[Amazon Science](#), [ZDNet](#)] “Graceful AI”
- [[Georgia Tech](#), [TechXplore](#), [Alhub](#)] “Machine Learning Technique Helps Wearable Devices Get Better at Diagnosing Sleep Disorders and Quality”

TALKS

- New principles and frameworks for empowering AI on edge devices, *Georgia Tech* (Jul ’22)
- New principles and frameworks for empowering AI on edge devices, *Apple AI* (Dec ’21)
- Regression Constrained Neural Architecture Search, *Amazon AI, CV* (Aug ’21)
- Compatibility-aware Visual Search, *Amazon AWS Rekognition* (Nov ’20)

MENTORING

- Shengyun (Anthony) Peng (Spring ’22): PhD CS at Georgia Tech
- Kevin Li (Fall ’21, Spring ’22): BS CS at Georgia Tech

AWARDS

- Amazon post internship fellowship worth USD 20,000 to fund the last semester of my PhD. **2021-2022**
- Selected to attend the **Summer School on Deep Learning** at IIIT Hyderabad. **Secured 1st position (overall)** among 150 attendees wherein all participants were ranked in 5 daily challenges. Reward entailed a travel grant to CVPR 2018 and a cash prize. **2017**
- Awarded the **Indian Association for Research in Computer Science (ACM-IARCS)** travel award to present my paper at MICCAI 2017, Quebec City, Canada. **2017**

- Ranked 217 all India for **ACM ICPC** Regionals. **2014**
- **All India Engineering Entrance Exam** - Top 0.2 percent among 1.2 million candidates.
- **IIT Joint Entrance Exam** - Top 0.9 percent among 0.5 million candidates.
- Won a team Gold and an individual Bronze medal (among 77 teams from 11 countries) at the 4th International Young Mathematician's Convention (**IYMC**). **2008**
- **National Cyber Olympiad** - All India Rank 128 (qualified for the 2nd stage). **2008**

SKILLS

Deep Learning Libraries : Pytorch (fluent), Mxnet (fluent), Tensorflow (Basic), Caffe (basic), Theano (basic).

Web Platforms : MeteorJS (fluent), Node (basic).

Version Management : Git (fluent)

Datastructures & Algorithms

Was active on several sport programming platforms through my handle jonvonneumann.

- Codeforces : Peak Rating 1682, **title - Expert**.
- Codechef : 131 problems solved, **peak global rank 307**.
- Ranked 186 and 168 worldwide, in google APAC rounds A and B. Invited to interview onsite at Google. **2014**