

Ragav Venkatesan

CONTACT	Email: ragav.venkatesan@gmail.com Homepage: https://ragav.net		
SUMMARY	Senior Software Engineer with industry-leading experience in building enterprise-level, cost-efficient distributed machine learning and computer vision platforms and a breadth of research areas spanning from infrastructure such as MLops, data governance and management, inference APIs to cutting-edge techniques such as generative AI, object detection, semantic-segmentation, domain adaptation. video-enhancement, generative animation, multiple-instance learning, and neural-network compression.		
PROFESSIONAL EXPERIENCE	<div>(E1) NVIDIA</div> <div>(N1) <i>Senior Software Engineer - NVIDIA Maxine and NVIDIA Broadcast</i> August 2021 – Present<ul style="list-style-type: none">• Maxine NVIDIA Inference Microservices (NIMs) and APIs.• AI-based video-enhancement features (webcam-denoising, artifact-reduction).• Generative AI-based image animation (eye-contact, live-portrait) models.• Migrated Maxine and Broadcast workloads to Maglev .</div> <div>(E2) Amazon</div> <div>(A1) <i>Applied Scientist - Amazon Alexa AI</i> November 2019 – August 2021</div> <div>(A2) <i>Applied Scientist - Amazon Web Services, AI Labs</i> May 2019 – November 2019</div> <div>(A3) <i>Research Scientist - Amazon Web Services, Sagemaker</i> November 2017 – May 2019<ul style="list-style-type: none">• Migrated Alexa AI workloads to AWS sagemaker platform.• Shipped ENAS for Alexa voice training.• Open source launched Amazon SageMaker Reinforcement Learning.• Launched Amazon SageMaker Object Detection Algorithms.• Launched Amazon SageMaker Semantic Segmentation Algorithms.• Launched Bring your own Tensorflow and MXNet models to SageMaker.• Open source launched Neural Network Compression using AWS Sagemaker RL.</div> <div>(E3) <i>Research Assistant - Arizona State University.</i> August 2011 – October 2017<ul style="list-style-type: none">• The Diabetic Retinopathy project Funding Agency: National Institutes of Health.• The MIDAS project Funding Agency: National Science Foundation.</div> <div>(E4) <i>Researcher Intern - Intel</i> December 2013 – August 2014<ul style="list-style-type: none">• Built vehicle and lane detection for automated driver assistance systems applications.</div>		
EDUCATION	<div>Doctor of Philosophy - Computer Science October 2017 Advisor: Professor Baoxin Li Arizona State University, Tempe, Arizona, USA</div> <div>Master of Science - Electrical Engineering August 2012 Advisor: Professor David Frakes Arizona State University, Tempe, Arizona, USA</div> <div>Bachelor of Engineering - Electronics and Communication Engineering June 2010 Anna University, Chennai, Tamil Nadu, India</div>		
BOOKS	<div>(B1) Ragav Venkatesan, Baoxin Li, “ Convolutional Neural Networks in Visual Computing: A Concise Guide ”, CRC Press, a Tyler & Francis company, 2017.</div> <div>Ragav Venkatesan, Baoxin Li, “ 卷积神经网络与视觉计算 ”, 机械工业出版社, 2019.</div>		

- BOOK CHAPTERS (Bc1) Xiang Xu, Xiong Zhou, **Ragav Venkatesan**, Gurumurthy Swaminathan, Orchid Majumdar, “*d*-SNE: Domain Adaptation using Stochastic Neighborhood Embedding. ” in *Domain Adaptation in Computer Vision With Deep Learning*, edited by Hemanth Venkateswara, Sethuraman Panchanathan, in *Springer Nature*, 2020.
- (Bc2) Parag Chandakkar, **Ragav Venkatesan**, Baoxin Li, “Feature Extraction and Learning for Visual Data” in “*Feature Engineering for Machine Learning and Data Analytics*, edited by Guozhu Dong, Huan Liu , *CRC Press, a Tyler & Francis company*, 2017.

SELECTED
PEER-REVIEWED
CONFERENCES

- (C1) Ansel MacLaughlin, Jwala Dhamala, Anoop Kumar, Sriram Venkatapathy, **Ragav Venkatesan**, Rahul Gupta, “ Evaluating the Effectiveness of Efficient Neural Architecture Search for Sentence-Pair Tasks. ”, in *Workshop on Insights from Negative Results in NLP at the Conference on Empirical Methods in Natural Language Processing (EMNLP)*, 2020. [ORAL]
- (C2) Xiang Xu, Xiong Zhou, **Ragav Venkatesan**, Gurumurthy Swaminathan, Orchid Majumdar “*d*-SNE: Domain Adaptation using Stochastic Neighborhood Embedding ”, in *IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, Long Beach, California, USA, 2019. [ORAL]
- (C3) **Ragav Venkatesan**, Jaya Vijetha Gattupalli, Baoxin Li, “ On the generality of neural image features ”, in *IEEE International Conference on Image Processing (ICIP)*, Phoenix, Arizona, USA, 2016. [ORAL]
- (C4) **Ragav Venkatesan**, Parag Shridhar Chandakkar, Baoxin Li, “ Simpler non-parametric methods provide as good or better results to multiple-instance learning. ”, in *IEEE International Conference on Computer Vision (ICCV)*, Santiago, Chile 2015. [Spotlight]
- (C5) **Ragav Venkatesan**, Parag Shridhar Chandakkar, Baoxin Li, “ Video-Based Self-Positioning for Intelligent Transport Systems Applications ”, in *the Tenth International Symposium on Visual Computing (ISVC)*, Las Vegas, Nevada, USA, 2015. [ORAL]
- (C6) **Ragav Venkatesan**, Christine Zwart, David Frakes, Baoxin Li, “ Perception-Inspired Spatio-Temporal Video Deinterlacing ”, in *the Eighth International Workshop on Video Processing and Quality Metrics for Consumer Electronics (VPQM)*, Tempe, Arizona, USA, 2014. [ORAL]
- (C7) Parag Shridhar Chandakkar*, **Ragav Venkatesan***, Baoxin Li, Helen Li, “ Retrieving clinically relevant diabetic retinopathy images using a multi-class multiple-instance framework ”, in *proceedings of SPIE conference on Medical Imaging, International Society of Optical and Photonics*, Orlando, Florida, USA, 2013. [ORAL]
- (C8) **Ragav Venkatesan***, Parag Shridhar Chandakkar*, Baoxin Li, Helen Li, “ Classification of Diabetic Retinopathy Images Using Multi-Class Multiple-Instance Learning Based on Color Correlogram Features ”, in *Proceedings of International Conference of the IEEE Engineering in Medicine and Biology Society 2012 (EMBC’12)*, San Diego, California, USA, 2012. [Poster]
- (C9) **Ragav Venkatesan***, Parag Shridhar Chandakkar*, Baoxin Li, Helen Li, “ Clinically Relevant Diabetic Retinopathy Image Retrieval Using a Multi-Class Multiple Instance Framework ”, in *proceedings of ACM conference on Bio-informatics, Computational Biology and Biomedicine (ACM-BCB’12)*. Orlando, Florida 2012. [ORAL]
- (C10) **Ragav Venkatesan**, Christine Zwart, David Frakes, “ Video Deinterlacing with Control Grid Interpolation Frameworks ”, in *Proceedings of the IEEE International Conference on Image Processing (ICIP)*, Orlando, Florida, USA, 2012. [Poster]
- * - Equal contribution from authors.

SELECTED
PEER-REVIEWED
JOURNALS

- (J1) Parag Shridhar Chandakkar, **Ragav Venkatesan**, Baoxin Li, “ MIRank-KNN: Multiple Instance Retrieval of Clinically-Relevant Diabetic Retinopathy Images ”, in *SPIE Journal of Medical Imaging*, 2017.
- (J2) **Ragav Venkatesan**, Christine Zwart, David Frakes, Baoxin Li “ Spatio-temporal Video Deinterlacing using Control Grid Interpolation ”, in *SPIE Journal of Electronic Imaging*, 24(2), 023022. 2015.
- (J3) Christine Zwart, **Ragav Venkatesan**, David Frakes, “ Decomposed Multidimensional Control Grid Interpolation for Common Interpolation-Based Image Processing Applications in Consumer Electronics ”, in *SPIE Journal of Electronic Imaging*, vol. 24, no.4, pp.43012-1 to 43012-12. 2012.

SELECTED ARXIV AND LONGFORM	(A1) Ragav Venkatesan , Gurumurthy Swaminathan, Xiong Zhou, Anna Luo, “Out-of-the-box channel pruned networks.”, arXiv:2004.14584, 2020.
	(A2) Ragav Venkatesan , Hemanth Venkateshwara, Sethuraman Panchanathan, Baoxin Li., “A strategy for an uncompromising incremental learner.”, arXiv:1705.00744, 2017.
	(A3) Ragav Venkatesan , Vijetha Gattupalli, Baoxin Li., “Neural Dataset Generality.”, arXiv: 1605.04369 2016.
	(A4) Ragav Venkatesan , Baoxin Li., “Diving deeper into mentee networks.”, arXiv: 1604.08220 2016.
	(A5) Lydia Manikonda, Ragav Venkatesan , Subbarao Kambhampati, and Baoxin Li., “Evolution of fashion brands on Twitter and Instagram.”, arXiv: 1512.01174 2015.
DISSERTATION	(R1) Doctoral dissertation <i>Novel image features and learning techniques.</i> October 2017
	(R2) Masters thesis <i>Video Deinterlacing using Control Grid Interpolation Frameworks.</i> August 2012
	(R3) Undergraduate thesis <i>A comparative study of detection of faults and estimation of distance to faults on wired communication channels, using TDR and FDR techniques.</i> May 2010
ISSUED PATENTS	(P1) Ragav Venkatesan , Gurumurthy Swaminathan, Vineet Khare, Bharathan Balaji, Saurabh Gupta, Leo Parker Dirac, Sahika Genc“ Decoupled machine learning training.” US11861490B1
	(P2) Ragav Venkatesan , Gurumurthy Swaminathan, Xiong Zhou, Anna Luo, Vineet Khare“ Applying compression profiles across similar neural network architectures.” US11809992B1
	(P3) Ragav Venkatesan , Gurumurthy Swaminathan, Xiong Zhou, Anna Luo, Vineet Khare“ Searching compression profiles for trained neural networks.” US11755603B1
	(P4) Ragav Venkatesan , Gurumurthy Swaminathan, Xiong Zhou, Anna Luo, Vineet Khare“ Reinforcement learning for training compression policies for machine learning models.” US11501173B1
	(P5) Ragav Venkatesan , Gurumurthy Swaminathan,“ Domain mapping for privacy preservation.” US10567334B1
TEACHING EXPERIENCE	(T1) <i>Instructor - Amazon Machine Learning University.</i> Convolutional Neural Networks (2018 - 2019)
	(T2) <i>Instructor - Arizona State University.</i> CSE 591: Introduction to deep learning for visual computing (January - May 2017)
	(T3) <i>Co-instructor - Arizona State University.</i> CSE 509: Digital Video Processing (August 2015 - December 2015)
	(T4) <i>Teaching Assistant - Arizona State University.</i> <ul style="list-style-type: none"> • CSE 575: Statistical Machine Learning <ul style="list-style-type: none"> – Dr. Jingrui He (January 2015 - May 2015) • CSE 569: Fundamentals of Statistical Learning <ul style="list-style-type: none"> – Dr. Baoxin Li (August 2014 - December 2014 and August 2016 - December 2016) • CSE 509: Digital Video Processing <ul style="list-style-type: none"> – Dr. David Claveau (August 2012 - December 2012) – Dr. Hari Sundaram (August 2013 - December 2013) • CSE 424, 485 and 486: Capstone Projects (January 2013 - May 2013)
	(T5) <i>Guest Lectures - Arizona State University.</i> Duties in this position involve providing specific lectures in courses on invitation. <ul style="list-style-type: none"> • CSE 569: Hidden Markov Models (September 2017) • CSE 569: Neural Networks (October - November 2017)
REFERENCES	Will be provided on request.