

# Ragav Venkatesan

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CONTACT	<b>Email:</b> ragav.venkatesan@gmail.com <b>Homepage:</b> https://ragav.net		
SUMMARY	Senior Software Engineer with over 7 years 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	<p>(E1) NVIDIA</p> <p>(N1) <i>Senior Software Engineer - NVIDIA Maxine and NVIDIA Broadcast</i> August 2021 – Present</p> <ul style="list-style-type: none"><li>• AI-based video-enhancement features (webcam-denoising, artifact-reduction).</li><li>• Generative AI-based image animation (eye-contact, live-portrait) models.</li><li>• Migrated Maxine and Broadcast workloads to Maglev .</li></ul> <p>(E2) Amazon</p> <p>(A1) <i>Applied Scientist - Amazon Alexa AI</i> November 2019 – August 2021</p> <p>(A2) <i>Applied Scientist - Amazon Web Services, AI Labs</i> May 2019 – November 2019</p> <p>(A3) <i>Research Scientist - Amazon Web Services, Sagemaker</i> November 2017 – May 2019</p> <ul style="list-style-type: none"><li>• Migrated Alexa AI workloads to AWS sagemaker platform.</li><li>• Shipped ENAS for Alexa voice training.</li><li>• Open source launched Amazon SageMaker Reinforcement Learning.</li><li>• Launched Amazon SageMaker Object Detection Algorithms.</li><li>• Launched Amazon SageMaker Semantic Segmentation Algorithms.</li><li>• Launched Bring your own Tensorflow and MXNet models to SageMaker.</li><li>• Open source launched Neural Network Compression using AWS Sagemaker RL.</li></ul> <p>(E3) <i>Research Assistant - Arizona State University.</i> August 2011 – October 2017</p> <ul style="list-style-type: none"><li>• The Diabetic Retinopathy project Funding Agency: National Institutes of Health.</li><li>• The MIDAS project Funding Agency: National Science Foundation.</li></ul> <p>(E4) <i>Researcher Intern - Intel</i> December 2013 – August 2014</p> <ul style="list-style-type: none"><li>• Built vehicle and lane detection for automated driver assistance systems applications.</li></ul>		
EDUCATION	<p><b>Doctor of Philosophy</b> - Computer Science October 2017 Advisor: Professor Baoxin Li Arizona State University, Tempe, Arizona, USA</p> <p><b>Master of Science</b> - Electrical Engineering August 2012 Advisor: Professor David Frakes Arizona State University, Tempe, Arizona, USA</p> <p><b>Bachelor of Engineering</b> - Electronics and Communication Engineering June 2010 Anna University, Chennai, Tamil Nadu, India</p>		
BOOKS	<p>(B1) <b>Ragav Venkatesan</b>, Baoxin Li, “ Convolutional Neural Networks in Visual Computing: A Concise Guide ”, CRC Press, a Tyler &amp; Francis company, 2017.</p> <p><b>Ragav Venkatesan</b>, Baoxin Li, “ 卷积神经网络与视觉计算 ”, 机械工业出版社, 2019.</p>		

- 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.

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- (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.

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- (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) <b>Ragav Venkatesan</b> , Gurumurthy Swaminathan, Xiong Zhou, Anna Luo, “Out-of-the-box channel pruned networks.”, arXiv:2004.14584, 2020.
	(A2) <b>Ragav Venkatesan</b> , Hemanth Venkateshwara, Sethuraman Panchanathan, Baoxin Li., “A strategy for an uncompromising incremental learner.”, arXiv:1705.00744, 2017.
	(A3) <b>Ragav Venkatesan</b> , Vijetha Gattupalli, Baoxin Li., “Neural Dataset Generality.”, arXiv: 1605.04369 2016.
	(A4) <b>Ragav Venkatesan</b> , Baoxin Li., “Diving deeper into mentee networks.”, arXiv: 1604.08220 2016.
	(A5) Lydia Manikonda, <b>Ragav Venkatesan</b> , Subbarao Kambhampati, and Baoxin Li., “Evolution of fashion brands on Twitter and Instagram.”, arXiv: 1512.01174 2015.
DISSERTATION	(R1) <b>Doctoral dissertation</b> <i>Novel image features and learning techniques.</i> October 2017
	(R2) <b>Masters thesis</b> <i>Video Deinterlacing using Control Grid Interpolation Frameworks.</i> August 2012
	(R3) <b>Undergraduate thesis</b> <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) <b>Ragav Venkatesan</b> , Gurumurthy Swaminathan, Xiong Zhou, Anna Luo, Vineet Khare“ Applying compression profiles across similar neural network architectures.” US11809992B1
	(P2) <b>Ragav Venkatesan</b> , Gurumurthy Swaminathan, Xiong Zhou, Anna Luo, Vineet Khare“ Searching compression profiles for trained neural networks.” US11755603B1
	(P3) <b>Ragav Venkatesan</b> , Gurumurthy Swaminathan, Xiong Zhou, Anna Luo, Vineet Khare“ Reinforcement learning for training compression policies for machine learning models.” US11501173B1
	(P4) <b>Ragav Venkatesan</b> , 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"> <li>• CSE 575: Statistical Machine Learning <ul style="list-style-type: none"> <li>– Dr. Jingrui He (January 2015 - May 2015)</li> </ul> </li> <li>• CSE 569: Fundamentals of Statistical Learning <ul style="list-style-type: none"> <li>– Dr. Baoxin Li (August 2014 - December 2014 and August 2016 - December 2016)</li> </ul> </li> <li>• CSE 509: Digital Video Processing <ul style="list-style-type: none"> <li>– Dr. David Claveau (August 2012 - December 2012)</li> <li>– Dr. Hari Sundaram (August 2013 - December 2013)</li> </ul> </li> <li>• CSE 424, 485 and 486: Capstone Projects (January 2013 - May 2013)</li> </ul>
	(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"> <li>• CSE 569: Hidden Markov Models (September 2017)</li> <li>• CSE 569: Neural Networks (October - November 2017)</li> </ul>
REFERENCES	Will be provided on request.