

Ragav Venkatesan

CONTACT

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SUMMARY

Principal Engineer with a decade of experience in delivering enterprise and consumer-grade, computer vision products and a breadth of R&D experience spanning from neural network training infrastructure such as MLops, data governance and management, inference APIs, distributed micro services and NIMs, gRPC APIs, and NIM blueprints to cutting-edge learning techniques such as generative AI and computer vision model development such as object detection, semantic-segmentation, domain adaptation, video-enhancement, generative animation, multiple-instance learning, distillation, neural-network compression and more.

PROFESSIONAL EXPERIENCE

(E1) NVIDIA

(N1) *Principal Engineer - NVIDIA Maxine and NVIDIA Broadcast* March 2025 – Present

(N2) *Senior Software Engineer - NVIDIA Maxine* August 2021 – March 2025

- Maxine NVIDIA Inference Microservices (NIMs), NIM blueprints.
- AI-based video-enhancement features (webcam-denoising, artifact-reduction).
- Generative AI-based video animation models and NIMs - eye-contact, live-portrait, audio2face2d, studio voice, speech live-portrait, lipsync.
- Generative 2D Digital human technology.

(E2) Amazon

(A1) *Applied Scientist - Amazon Alexa AI* November 2019 – August 2021

(A2) *Applied Scientist - Amazon Web Services, AI Labs* May 2019 – November 2019

(A3) *Research Scientist - Amazon Web Services, Sagemaker* November 2017 – May 2019

- Architected Alexa AI workloads for AWS sagemaker platform.
- ENAS for Alexa voice training.
- Amazon SageMaker Reinforcement Learning Service.
- Amazon SageMaker Object Detection Algorithms.
- Amazon SageMaker Semantic Segmentation Algorithms.
- Bring your own Tensorflow and MXNet models to SageMaker.
- Neural Network Compression using AWS Sagemaker RL.

(E3) Intel

(I1) *Researcher (Intern)* December 2013 – August 2014

- Vehicle and lane detection for automated driver assistance systems.

EDUCATION

Doctor of Philosophy - Computer Science October 2017

Advisor: Professor Baoxin Li

Arizona State University, Tempe, Arizona, USA

Master of Science - Electrical Engineering August 2012

Advisor: Professor David Frakes

Arizona State University, Tempe, Arizona, USA

Bachelor of Engineering - Electronics and Communication Engineering June 2010

Anna University, Chennai, Tamil Nadu, India

BOOKS

(B1) **Ragav Venkatesan**, Baoxin Li, “ Convolutional Neural Networks in Visual Computing: A Concise Guide ”, CRC Press, a Tyler & Francis company, 2017.

Ragav Venkatesan, Baoxin Li, “ 卷积神经网络与视觉计算 ”, 机械工业出版社, 2019.

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.

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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 , Xiong Zhou, Gurumurthy Swaminathan, Fedor Zhadnov “Zero-shot transfer of domain-adapted base networks.” US12277192
	(P2) Ragav Venkatesan , Gurumurthy Swaminathan, Vineet Khare, Bharathan Balaji, Saurabh Gupta, Leo Parker Dirac, Sahika Genc “Decoupled machine learning training.” US11861490
	(P3) Ragav Venkatesan , Gurumurthy Swaminathan, Xiong Zhou, Anna Luo, Vineet Khare “Applying compression profiles across similar neural network architectures.” US11809992
	(P4) Ragav Venkatesan , Gurumurthy Swaminathan, Xiong Zhou, Anna Luo, Vineet Khare “Searching compression profiles for trained neural networks.” US11755603
	(P5) Ragav Venkatesan , Gurumurthy Swaminathan, Xiong Zhou, Anna Luo, Vineet Khare “Reinforcement learning for training compression policies for machine learning models.” US11501173
	(P6) Ragav Venkatesan , Gurumurthy Swaminathan, “Domain mapping for privacy preservation.” US10567334
SELECTED TALKS AND LECTURES	(L1) Creating 2D Digital Humans , - 2025. <i>NVIDIA GTC.</i>
	(L2) Microsoft Cloud + AI, Redmond, Washington , - 2020. <i>ML problems and solutions at an enterprise scale.</i>
	(L3) Facebook Reality Labs, Redmond, Washington , - 2020. <i>ML problems and solutions at an enterprise scale.</i>
	(L4) IEEE Conference on Computer Vision and Pattern Recognition , - 2019. <i>Domain Adaptation using Stochastic Neighborhood Embedding.</i>
	(L5) Microsoft Research, Redmond, Washington , - 2019. <i>Common Image Dataset Issues and Solutions.</i>
	(L6) Amazon A9 Computer Vision Conference , - 2019. <i>Workshop on Amazon SageMaker.</i>
	(L7) Qualcomm , San Diego, California, - 2017. <i>Tools for Measuring Image Generality in Datasets.</i>
	(L8) Siemens , Princeton, New Jersey, - 2017. <i>Measuring Dataset-level Image Generality.</i>
	(L9) International Conference on Image Processing , Phoenix, Arizona - 2016. <i>Neural Dataset Generality.</i>
	(L10) International Workshop on Video Processing and Quality Metrics for Consumer Electronics , Chandler, Arizona, USA - 2014. <i>Perception-Inspired Spatio-Temporal Video Deinterlacing.</i>
	(L11) SPIE conference on Medical Imaging , Orlando, Florida, USA - 2013. <i>Retrieving clinically relevant diabetic retinopathy images using a multi-class multiple instance framework.</i>
REFERENCES	Will be provided on request.