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 infrastructure such as MLops, data governance and management, inference APIs to cutting-edge learning techniques such as generative AI, object detection, semantic-segmentation, domain adaptation. video-enhancement, generative animation, multiple-instance learning, distillation and neural-network compression.

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) and APIs.
- AI-based video-enhancement features (webcam-denoising, artifact-reduction).
- Generative AI-based image animation (eye-contact, live-portrait, audio2face2d, studio voice) models.

(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

- 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.

(E3) *Research Assistant - Arizona State University.* August 2011 – October 2017

- The Diabetic Retinopathy project Funding Agency: National Institutes of Health.
- The MIDAS project Funding Agency: National Science Foundation.

(E4) *Researcher Intern - Intel* December 2013 – August 2014

- Built vehicle and lane detection for automated driver assistance systems applications.

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 Opticals 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** *Novel image features and learning techniques.* October 2017

(R2) **Masters thesis** *Video Deinterlacing using Control Grid Interpolation Frameworks.* August 2012

(R3) **Undergraduate thesis** *A comparative study of detection of faults and estimation of distance to faults on wired communication channels, using TDR and FDR techniques.* 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

Selected Talks and Lectures

(L1) **Creating 2D Digital Humans**, - 2025.
NVIDIA GTC.

(L2) **Microsoft Cloud + AI, Redmond, Washington**, - 2020.
ML problems and solutions at an enterprise scale.

(L3) **Facebook Reality Labs, Redmond, Washington**, - 2020.
ML problems and solutions at an enterprise scale.

(L4) **IEEE Conference on Computer Vision and Pattern Recognition**, - 2019.
Domain Adaptation using Stochastic Neighborhood Embedding.

(L5) **Microsoft Research, Redmond, Washington**, - 2019.
Common Image Dataset Issues and Solutions.

(L6) **Amazon A9 Computer Vision Conference**, - 2019.
Workshop on Amazon SageMaker.

(L7) **ASU International Students Graduate Orientation**, - 2017.
Professional Networking for Graduate Students.

(L8) **Qualcomm**, San Diego, California, - 2017.
Tools for Measuring Image Generality in Datasets.

(L9) **Siemens**, Princeton, New Jersey, - 2017.
Measuring Dataeset-level Image Generality.

(L10) **International Conference on Image Processing**, Phoenix, Arizona - 2016.
Neural Dataset Generality.

(L11) **International Workshop on Video Processing and Quality Metrics for Consumer Electronics**, Chandler, Arizona, USA - 2014.
Perception-Inspired Spatio-Temporal Video Deinterlacing.

(L12) **SPIE conference on Medical Imaging**, Orlando, Florida, USA - 2013.
Retrieving clinically relevant diabetic retinopathy images using a multi-class multiple instance framework.

References

Will be provided on request.