# Ragav Venkatesan

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**Summary**

Applied Scientist with experience in engineering enterprise-level, cost-efficient distributed machine learning and computer vision platforms and a breadth of research areas spanning multiple-instance learning, domain adaptation, neural network compression and network architecture search.


**Professional Experience**

(E1) Amazon

(A1) *Applied Scientist - Amazon Alexa AI* November 2019 – Present
(A2) *Applied Scientist - Amazon Web Services, AI Labs* May 2019 – November 2019
(A3) *Research Scientist - Amazon Web Services, Sagemaker* November 2017 – May 2019

*Publicly Available Artifacts:*

- Open Source: Amazon SageMaker Reinforcement Learning.
- Launch Announcement: Amazon SageMaker Object Detection Algorithms.
- Launch Announcement: Amazon SageMaker Semantic Segmentation Algorithms.
- Launch Announcement: Bring your own Tensorflow and MXNet models to SageMaker.
- Open Source: Neural Network Compression using AWS SageMaker RL.

(E2) *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.

(E3) *Computer Vision Research 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 , *CRC Press, a Tyler & Francis company*, 2017.

**Selected Peer-Reviewed Journals**

(J1) Parag Shridhar Chandakkar, **Ragav Venkatesan**, Baoxin Li, " MIRank-KNN: Multiple Instance Retrieval of Clinically-Relevant Diabetic Retinopathy Image ", *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 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 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," Domain mapping for privacy preservation." US10567334B1

## Teaching Experience

(T1) *Instructor - Amazon Machine Learning University.*
Convolutional Neural Networks (2018 - 2019)

(T2) *Instructor - Arizona State University.*
CSE 591: Introduction to deep learning for visual computing (January - May 2017)

(T3) *Co-instructor - Arizona State University.*
CSE 509: Digital Video Processing (August 2015 - December 2015)

(T4) *Teaching Assistant - Arizona State University.*

- CSE 575: Statistical Machine Learning
  - Dr. Jingrui He (January 2015 - May 2015)
- CSE 569: Fundamentals of Statistical Learning
  - Dr. Baoxin Li (August 2014 - December 2014 and August 2016 - December 2016)
- CSE 509: Digital Video Processing
  - 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) *Guest Lectures - Arizona State University.*
Duties in this position involve providing specific lectures in courses on invitation.

- CSE 569: Hidden Markov Models (September 2017)
- CSE 569: Neural Networks (October - November 2017)

## References

Will be provided on request.