

Ragav Venkatesan

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LINKS [LinkedIn](#) [Homepage](#) [Google Scholar](#) [GitHub](#) [Amazon Author](#)

PROFILE Applied Scientist II at Alexa AI focused on emerging machine learning technologies. Areas of recent research interests include:

- [AutoML / Neural Network Compression using AutoML.](#)
- [Domain Adaptation.](#)
- [Multiple-instance learning.](#)

PROFESSIONAL EXPERIENCE (E1) Amazon
(A1) *Applied Scientist II - Amazon Alexa AI* November 2019 – Present
(A2) *Applied Scientist II - Amazon Web Services, AI Labs* May 2019 – November 2019
(A3) *Research Scientist - Amazon Web Services, Sagemaker* November 2017 – May 2019

Statistics of Tenure:

- Patents filed/issued: 7/1.
- Peer-reviewed publications : 1.

External Artifacts:

- [Amazon SageMaker Reinforcement Learning.](#)
- [Amazon SageMaker Object Detection Algorithms.](#)
- [Amazon SageMaker Semantic Segmentation Algorithms.](#)
- [Bring your own Tensorflow and MXNet models to Amazon SageMaker.](#)
- [Neural Network Compression using AWS SageMaker Reinforcement Learning.](#)

Teaching:

- Amazon A9 CVC workshop on AWS Sagemaker. February 2019
- Convolutional Neural Networks at Machine Learning University. 2019 – 2018
- Deep Neural Network Bootcamp. 2018

(E2) *Research Assistant - Arizona State University.* August 2011 – October 2017

(E3) *Computer Vision Research Intern - Intel Corp.* 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

- [The Diabetic Retinopathy project](#) Funding Agency: National Institutes of Health.
- [The MIDAS project](#) Funding Agency: National Science Foundation.

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

- ISSUED PATENTS (P1) **Ragav Venkatesan**, Gurumurthy Swaminathan, “ **Domain mapping for privacy preservation.**” US10567334B1
- 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.
- THESIS (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
- PEER-REVIEWED JOURNALS **Multiple-Instance Learning**
(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.
- Image Interpolation**
(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.
- PEER-REVIEWED CONFERENCES **Deep Learning**
(C1) 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] (< 5.5% Acceptance Rate).
(C2) **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]
- Multiple-Instance Learning**
(C3) **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]
(C4) 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 Optics and Photonics*, Orlando, Florida, USA, 2013. [ORAL]

- (C5) **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]
- (C6) **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]

ADAS: Bayesian Modelling

- (C7) **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]

Image Interpolation

- (C8) **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]
- (C9) **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.

ARXIV AND
LONGFORM

Deep Learning

- (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.

Social Media Mining

- (A5) Lydia Manikonda, **Ragav Venkatesan**, Subbarao Kambhampati, and Baoxin Li., “Evolution of fashion brands on Twitter and Instagram.”, [arXiv: 1512.01174](#) 2015.

TEACHING
EXPERIENCE

- (T1) *Instructor - Arizona State University.*
CSE 591: Introduction to deep learning for visual computing (January - May 2017)
- (T2) *Co-instructor - Arizona State University.*
CSE 509: Digital Video Processing (August 2015 - December 2015)
- (T3) *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)

- (T4) *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)

- SELECTED TALKS AND LECTURES
- (L1) **Microsoft Cloud + AI, Redmond, Washington**, - 2020.
ML problems at a platform scale.
 - (L2) **Facebook Reality Labs, Redmond, Washington**, - 2020.
ML problems at a platform scale.
 - (L3) **IEEE Conference on Computer Vision and Pattern Recognition**, - 2019.
Domain Adaptation using Stochastic Neighborhood Embedding.
 - (L4) **Microsoft Research, Redmond, Washington**, - 2019.
Common Dataset Issues and Solutions.
 - (L5) **Amazon A9 Computer Vision Conference**, - 2019.
Workshop on Amazon SageMaker.
 - (L6) **Seattle Machine Learning Meetup**, - 2019.
Amazon SageMaker Semantic Segmentation.
 - (L7) **ASU International Students Graduate Orientation**, - 2017.
Professional Networking for Graduate Students.
 - (L8) **Qualcomm**, San Diego, California, - 2017.
Tools for Measuring Images.
 - (L9) **Siemens**, Princeton, New Jersey, - 2017.
Measuring Images.
 - (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.

- SOFTWARE
- (S1) **Tf-Lenet** : Using LeNet as a case-study, this repository provides an in-depth migration guide from theano to tensorflow.
 - (S2) **Yann** : Yet another neural network toolbox. A versatile toolbox for building various types of state-of-the-art Convolutional Neural Networks, with many options. This toolbox was written on top of theano and provides plug-and-play and modular capabilities of generating performance and research oriented deep convolutional neural networks.
 - (S3) **InstaCrawl** : Toolkit for crawling down **Instagram**.
 - (S4) **Search Engine** : Toolkit written in **PyLucene** for implementing vector-space similarities with additional options for Authorities and Hubs, Page Rank and other tools needed to construct a search engine.
 - (S5) Open Source Contributions: Contributed to various open source repositories including **SageMaker Examples** , **SageMaker Python SDK** and **Gluon-CV** .

REFERENCES Will be provided on request.