

Ragav Venkatesan

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CONTACT	1800 9th Ave, Amazon Alexandria SEA-18, Seattle, WA-98101.	email: email@ragav.net phone: 480-414-1164		
	LinkedIn	Personal Homepage	Google Scholar	GitHub
PROFILE	Research Scientist at AWS AI working on Amazon SageMaker, focused on emerging computer vision and machine learning technologies. Areas of specialties include: <ul style="list-style-type: none">• Neural Network Compression.• Convolutional neural networks.• Multiple-instance learning.			
EDUCATION	Doctor of Philosophy - Computer Science Advisor: Professor Baoxin Li Arizona State University, Tempe, Arizona, USA			October 2017
	Master of Science - Electrical Engineering Advisor: Professor David Frakes Arizona State University, Tempe, Arizona, USA			August 2012
	Bachelor of Engineering - Electronics and Communication Engineering Anna University, Chennai, Tamil Nadu, India			June 2010
PROFESSIONAL EXPERIENCE	(P1) <i>Research Scientist - Amazon Web Services</i> November 2017 – Present <ul style="list-style-type: none">• Developed the following artifacts with the Amazon SageMaker Team:<ul style="list-style-type: none">– Amazon SageMaker Reinforcement Learning .– Amazon SageMaker Object Detection Algorithms .– Amazon SageMaker Semantic Segmentation Algorithms .– Bring your own Tensorflow and MXNet models to Amazon SageMaker.• Teaching<ul style="list-style-type: none">– Amazon A9 CVC workshop on AWS Sagemaker. February 2019– Convolutional Neural Networks at Amazon Machine Learning University. 2018– Deep Neural Network Bootcamp. 2018			
	(P2) <i>Research Assistant - Arizona State University</i> . <ul style="list-style-type: none">• The Diabetic Retinopathy project Funding Agency: National Institute of Health.• The MIDAS project Funding Agency: National Science Foundation.• Action recognition and capability modeling Funding Agency: National Science Foundation.			August 2011 – October 2017
	(P3) <i>Computer Vision Research Intern - Intel Corp.</i> <ul style="list-style-type: none">• Built vehicle and lane detection for automated driver assistance systems applications.			December 2013 – August 2014
THESIS	(R1) Doctoral dissertation Novel image features and learning techniques . (R2) Masters thesis Video Deinterlacing using Control Grid Interpolation Frameworks . (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> .			October 2017 August 2012 May 2010
BOOKS	(B1) Ragav Venkatesan , Baoxin Li, “ Convolutional Neural Networks in Visual Computing: A Concise Guide ”, CRC Press, a Tyler & Francis company, 2017.			

BOOK CHAPTERS (C1) 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.

PEER-REVIEWED
JOURNAL
PUBLICATIONS

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
CONFERENCE
PUBLICATIONS

Deep Learning

- (C1) Xiang Xu, Xiong Zhou, **Ragav Venkatesan**, Gurumurthy Swaminathan, Orchid Majumdar “ dSNE: Domain Adaptation using Stochastic Neighborhood Embedding ”, in *IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, Long Beach, California, USA, 2019.
- (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.
- (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 Opticals 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.
- (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.

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.
- * - Equal contribution from authors.

ARXIV PAPERS

Deep Learning

- (A1) **Ragav Venkatesan**, Hemanth Venkateshwara, Sethuraman Panchanathan, Baoxin Li., “A strategy for an uncompromising incremental learner.”, [arXiv: 1705.00744](#) 2017.
- (A2) **Ragav Venkatesan**, Vijetha Gattupalli, Baoxin Li., “Neural Dataset Generality.”, [arXiv: 1605.04369](#) 2016.
- (A3) **Ragav Venkatesan**, Baoxin Li., “Diving deeper into mentee networks.”, [arXiv: 1604.08220](#) 2016.

Social Media Mining

- (A4) Lydia Manikonda, **Ragav Venkatesan**, Subbarao Kambhampati, and Baoxin Li., “Evolution of fashion brands on Twitter and Instagram.”, [arXiv: 1512.01174](#) 2015.

MEDIA

- (M1) **Ragav Venkatesan**, “ **Academic Dishonesty: On why integrity is an important virtue.** ”, in *The Education Plus column of The Hindu*, Oct 22nd 2012.

TEACHING EXPERIENCE

- (T1) *Instructor - Arizona State University.*
CSE 591: Introduction to deep learning for visual computing (January - May 2017)
[course website.](#)
- (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) **ASU International Students Graduate Orientation**, - 2017.
Professional Networking for Graduate Students
- (L2) **Qualcomm**, San Diego, California, - 2017.
Tools for Measuring Images
- (L3) **Siemens**, Princeton, New Jersey, - 2017.
Measuring Images
- (L4) **International Conference on Image Processing**, Phoenix, Arizona - 2016.
Neural Dataset Generality
- (L5) **International Workshop on Video Processing and Quality Metrics for Consumer Electronics**, Chandler, Arizona, USA - 2014.
Perception-Inspired Spatio-Temporal Video Deinterlacing.

- (L6) **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** .

SYNERGISTIC ACTIVITIES

Membership

- Student Member, IEEE.
- Member, IEEE Signal Processing Society.
- Member, IEEE Computer Society.
- Member, ASU Visual Representation and Processing Group.
- Member ASU CUBiC: Cognitive and Ubiquitous Computing Group.

Reviewer

- IEEE Transactions of Neural Networks and Learning Systems, 2019.
- IEEE Winter Conference on Applications of Computer Vision, 2015 - 2019.
- ACM SIGGRAPH 2017.
- International Joint Conferences on Artificial Intelligence, 2017.
- IEEE International Symposium on Biomedical Imaging, 2016 -2017.
- IEEE Transactions on Circuits and Systems for Video Technology, 2013 - 2015.
- SPIE Journal of Electronic Imaging, 2013 - 2017.
- ASU-GPSA Centennial Professorship Award 2015.

Student Volunteer

- IEEE International Conference on Image Processing, 2016.
- ACM Multimedia, Sedona, Arizona, USA, 2011.

Mentoring

- Satyaki Chakraborty, Intern at AWS AI Labs.
- Jaya Vijetha Reddy Gatupalli, MS Student.
- Yikang Li, MS Student.
- Anchit Agarwal, MS Student.

CONFERENCES ATTENDED

- Amazon A9 CVC, San Jose, 2019.
- Amazon Machine Learning Conference, Seattle, Washington, 2018.
- ACM Turing Award Ceremony, San Francisco, California, 2017.
- Facebook Annual Machine Learning Seminar, Seattle, Washington, USA 2017.

- IEEE International Conference on Image Processing, Phoenix, Arizona, USA, 2016.
- IEEE International Conference on Computer Vision, Santiago, Chile, 2015.
- International Symposium on Visual Processing and Quality Metrics, Chandler, Arizona, USA, 2014.
- SPIE Conference on Medical Imaging Orlando, Florida, USA, 2013.
- ACM Conference on Multimedia, Scottsdale, Arizona, USA, 2011.

PROGRAMMING **Programming Languages:** Python, Matlab, and L^AT_EX.
Libraries: Tensorflow, MxNet, Gluon, Theano, OpenCV, and other Python ML basics.

AWARD AND GRANTS

- ASU CIDSE travel grants (Multiple)
- Facebook travel grant for Facebook machine learning seminar and tour 2017.
- ACM SIGMM travel award for ACM Turing Award Ceremony, 2017.

NONSCHOLASTIC ACTIVITIES **Founder, administrator, executive member and various other offices** Online help forums for new incoming graduate students in organizations including ASU Launchpad (co-founder), United States-India Education Foundation, Chennai and others.

Indian students association Executive member, counsel and secretary of a major university student organization and interest group. Worked on promoting cultural and academic special-interest issues, drafted statements and policies. Managed events for upto 700 people-audience at prestigious venues.

Thaalam Studios Founder, owner and lead producer at self-funded music studio. **Le Kaapi Projekt** was music collaboration that was an outcome from this studio.

ASU International Graduate Student Conference Organized workshops on networking and career planning.

REFERENCES Will be provided on request.