

Ragav Venkatesan

This document has embedded web-links and is made for a computer viewing only. Click [here](#) for a printable version.

CONTACT	699 Mill Ave, Office 371 BB, Tempe, AZ-85281	email: email@ragav.net phone: 480-414-1164		
	LinkedIn	Personal Homepage	Google Scholar	GitHub
PROFILE	Research Scientist at Amazon Web Services focused on emerging computer vision and machine learning technologies. Areas of specialties include: <ul style="list-style-type: none">• Theory of Machine Learning• Convolutional neural networks.• Multiple-instance learning Medical image lesion detection and Clinically-Relevant Medical Image Retrieval.• Bayesian Modeling for Traffic, Lane Detection and Visual Object Detection.• Image and Video Interpolation.			
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
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	Deep Learning (J1) Ragav Venkatesan , Hemanth Venkateshwara, Sethuraman Panchanathan, Baoxin Li, “ A Strategy for an Uncompromising Incremental Learner ”, <i>under review at IEEE Transactions of Neural Networks and Learning Systems</i> , 2017. Multiple-Instance Learning (J2) Parag Shridhar Chandakkar, Ragav Venkatesan , Baoxin Li, “ MIRank-KNN: Multiple Instance Retrieval of Clinically-Relevant Diabetic Retinopathy Image ”, <i>in SPIE Journal of Medical Imaging</i> , 2017.			

Image Interpolation

- (J3) **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.
- (J4) 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) **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

- (C2) **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.
- (C3) 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]
- (C4) **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.
- (C5) **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

- (C6) **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

- (C7) **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]
- (C8) **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.

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.

PROFESSIONAL EXPERIENCE

- (P1) *Research Scientist - Amazon Web Services* November 2017 – Present
- Duties ongoing.
- (P2) *Research Assistant - Arizona State University.* August 2011 – October 2017
- [The Diabetic Retinopathy project](#) Funding Agency: National Institute of Health. From a dataset of diabetic retinopathy images a clinically relevant retrieval system was built using a technique called 'Rank-KNN'. and invented. A nearest neighbor-based multiple instance classification system was also invented.
 - [The MIDAS project](#) Funding Agency: National Science Foundation. This project involved many teams working on many aspects including vision-based vehicle tracking, self-positioning, traffic management and congestion pricing. Major research development involved a Bayesian system that was invented to accomplish self-positioning.
 - Action recognition and capability modeling Funding Agency: National Science Foundation. This project involved multiple teams researching on action, activity and capability models for recognizing actions and activities from surveillance videos.
- (P3) *Computer Vision Research Intern - Intel Corp.* December 2013 – August 2014
- Built vehicle and lane detection for automated driver assistance systems applications.

TEACHING EXPERIENCE

- (T1) *Instructor - Arizona State University.*
[CSE 591: Introduction to deep learning for visual computing](#) (January - May 2017)
Since this is the first offering of the course, duties in this position involved creation of the course manifesto, syllabus, planning and structuring of the material along with presenting lectures, holding office hours, designing and grading exams, homeworks and projects. The lectures, slides and all materials of the course are available in public domain at the [course website](#).
This position also resulted in the creation of the [Yann](#) toolbox which was used in the course for projects and other implementations.
- (T2) *Co-instructor - Arizona State University.*
CSE 509: Digital Video Processing (August 2015 - December 2015)
Duties in this position involve creating syllabi, giving lectures on the material, holding office hours, preparing homeworks, projects and tests, and grading.

(T3) *Teaching Assistant - Arizona State University.*

Duties in this position involve holding office hours, preparing homeworks, projects and tests, and grading.

- 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)

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.

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 Winter Conference on Applications of Computer Vision, 2015 - 2018.
- 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

- Jaya Vijetha Reddy Gatupalli, MS Student.
- Yikang Li, MS Student.
- Anchit Agarwal, MS Student.

CONFERENCES ATTENDED

- 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: C++, Intel C++, Python 2.x / 3.x, Matlab, and L^AT_EX.
Libraries: Theano, OpenCV, IPP, Scikit Learn 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.