

Vamsi Krishna Ithapu

- CONTACT 8510 154th Avenue NE ithapu@fb.com
Redmond WA +1 650-842-0647
98052 USA <https://www.vamsiithapu.com/>
- EDUCATION **University of Wisconsin-Madison**, Madison, Wisconsin, USA
- Doctor of Philosophy (Ph.D) Candidate, Computer Sciences Jan 2012 - Feb 2018
Minors: Electrical and Computer Engineering, Statistics
Grade Point Average: 3.58/4
Thesis: Exploiting Structure for Designing Clinical Trials: Testing, Learning and Inference Algorithms
Advisor: Vikas Singh
- Indian Institute of Technology**, Guwahati, India
- Bachelor of Technology, Electronics and Communication Engineering Aug 2006 - May 2010
Grade Point Average: 8.52/10
Thesis: Investigation of Diversity in Multiple Input Multiple Output (MIMO) SAR Imaging Systems
Advisor: Amit Kumar Mishra
- WORK EXPERIENCE
- *Research Scientist* Mar 2018 onwards
Facebook Reality Lab, Redmond USA
 - *Research Assistant* Jul 2013 - Jan 2018
 - *Project Assistant* Jan 2012 - Jun 2013
Wisconsin Alzheimer's Disease Research Center, University of Wisconsin-Madison, Madison USA
 - *Teaching Assistant* Aug 2011 - Dec 2011
Course: Introduction to Computer Engineering
Electrical and Computer Engineering, University of Wisconsin-Madison, Madison USA
 - *Research Engineer* Aug 2010 - Jun 2011
Acoustic Research Laboratory, National University of Singapore, Singapore
 - *Research Intern* May 2009 - Jul 2009
Dept. of Medical Informatics, RWTH Aachen University, Aachen, Germany
- PUBLICATIONS **Conferences**
1. *[Under Review]* Y. Zhou, H. Jiang, **V. K. Ithapu**, On the predictability of HRTFs from ear shapes using deep networks
 2. *[Under Review]* A. Kumar*, Y. Wang, **V. K. Ithapu**, C. Fuegen, Do sound event representations generalize to other audio tasks? A case study in audio transfer learning
 3. C. Chen, U. Jain, C. Schissler, S A Gari, Z Al-Halah, **V. K. Ithapu**, P. Robinson, K. Grauman, SoundSpaces: Audio-Visual Navigation in 3D Environments, European Conference on Computer Vision (ECCV), 2020
[Spotlight Presentation]
 4. A. Kumar, **V. K. Ithapu**, A Sequential Self Teaching Approach for Improving Generalization in Sound Event Recognition, International Conference on Machine Learning (ICML), 2020
 5. A. Kumar, **V. K. Ithapu**, SeCoST: Sequential Co-Supervision for Weakly Labeled Audio Event Detection, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2020

6. **V. K. Ithapu**, Decoding the Deep: Exploring Class Hierarchies of Deep Representations using Multiresolution Matrix Factorization, Explainable Computer Vision Workshop, 2017
[Oral Presentation]
7. H. Hao, Y. Zhang, **V. K. Ithapu**, G. Wahba, S. C. Johnson, V. Singh, When can Multi-site Datasets be Pooled for Regression: Hypothesis Tests, ℓ_2 -consistency and Neuroscience Applications, International Conference on Machine Learning (ICML), 2017
8. **V. K. Ithapu**, R. Kondor, S. C. Johnson, V. Singh, The Incremental Multiresolution Matrix Factorization Algorithm, Computer Vision and Pattern Recognition (CVPR), 2017
9. **V. K. Ithapu**, S. Ravi, V. Singh, On the Interplay of Network Structure and Gradient Convergence in Deep Learning, 54th Allerton Conference on Communication, Control and Computing, 2016
10. H. Hao, **V. K. Ithapu**, S. Ravi, V. Singh, G. Wahba, S. C. Johnson, Hypothesis Testing in Unsupervised Domain Adaptation with Applications in Alzheimer’s Disease, Neural Information Processing Systems (NIPS), 2016
11. S. Ravi, **V. K. Ithapu**, S. C. Johnson, V. Singh, Experimental Design on a Budget for Sparse Linear Models and Applications, International Conference on Machine Learning (ICML), 2016
12. L. Mukherjee, S. Ravi, **V. K. Ithapu**, T. Holmes, V. Singh, An NMF perspective on Binary Hashing, International Conference on Computer Vision (ICCV), 2015
13. S. J. Hwang, M. Collins, S. Ravi, **V. K. Ithapu**, N. Adluru, S. C. Johnson, V. Singh, A Projection Free Method for Generalized Eigenvalue Problem with a Nonsmooth Regularizer, International Conference on Computer Vision (ICCV), 2015
14. **V. K. Ithapu**, S. Ravi, V. Singh, Convergence of Gradient based Pre-training in Denoising Autoencoders, arxiv:1502.03537
15. **V. K. Ithapu**, V. Singh, O. Okonkwo, S. C. Johnson, Randomized Denoising Autoencoders for Smaller and Efficient Imaging based AD Clinical Trials, Medical Image Computing and Computer Assisted Intervention (MICCAI), 2014
16. **V. K. Ithapu***, C. Hinrichs*, Q. Sun, S. C. Johnson, V. Singh, Speeding up Permutation Testing in Neuroimaging, Advances in Neural Information Processing Systems (NIPS), 2013
* : Ithapu and Hinrichs contributed equally [Oral Spotlight]
17. J. Xu, **V. K. Ithapu**, L. Mukherjee, J. Rehg, V. Singh, GOSUS: Grassmannian Online Subspace Updates with Structured-sparsity, International Conference on Computer Vision (ICCV), 2013
18. **V. K. Ithapu**, A. Fritsche, A. Oppelt, M. Westhofen, T. M. Deserno, Fundus Image Registration for Vestibularis Research, Proceedings of SPIE Medical Imaging, 2010
19. **V. K. Ithapu**, A. K. Mishra, R. K. Panigrahi, Diversity Employment into Target plus Clutter SAR Imaging using MIMO Configuration, Indian Antenna Week, 2010
20. **V. K. Ithapu**, A. K. Mishra, Hybrid Diversity Strategy using MIMO Radar for Target Tracking, IEEE Applied Electromagnetics Conference (AEMC), 2009

Journals

21. [Under Review] I. Ananthabhotla, **V. K. Ithapu**, O. Brimijoin, A Framework for Designing HRTF Distance Metrics that Capture Localization Perception
22. [Under Review] T. Vo, **V. K. Ithapu**, V. Singh, M. A. Newton, Dimension constraints improve hypothesis testing for large-scale, graph-associated, brain-image data, arXiv preprint arXiv:1908.07176
23. F. Gutierrez-Barragan, **V. K. Ithapu**, C. Hinrichs, C. Maumet, S. C. Johnson, T. E. Nichols, V.

- Singh, Accelerating Permutation Testing in Voxel-wise Analysis through Subspace Tracking: A new plugin for SnPM, Neuroimage, 2017 [**Impact Factor: 6.9**]
24. **V. K. Ithapu**, S. Ravi, V. Singh, On Architectural Choices in Deep Learning: From Network Structure to Gradient Convergence and Parameter Estimation, In: Submitted (arXiv:1702.08670)
 25. N. N. Kumar, M. Gautam, J. J. Lochhead, D. J. Wolack, **V. K. Ithapu**, V. Singh, R. G. Thorne, Relative Vascular Permeability and Vascularity across different regions of the rat nasal mucosa: Implications for Nasal Physiology and Drug Delivery, *Nature Scientific Reports*, 2016 [**Impact Factor: 4.8**]
 26. **V. K. Ithapu**, V. Singh, O. C. Okonkwo, R. J. Chappell, N. M. Dowling, S. C. Johnson, Imaging based Enrichment Criteria using Deep Learning Algorithms for Efficient Clinical Trials in MCI, Alzheimer's and Dementia, 2015 [**Impact Factor: 13.2**]
 27. **V. K. Ithapu**, V. Singh, C. Lindner, B. Austin, C. Hinrichs, C. Carlsson, B. Bendlin, S. C. Johnson, Extracting and Summarizing White Matter Hyperintensities using Supervised Segmentation Methods in Alzheimer's Disease Risk and Aging Studies, *Human Brain Mapping*, 2013 [**Impact Factor: 6.0**]
 28. **V. K. Ithapu**, A. K. Mishra, Cooperative Multi-Monostatic SAR: A New SAR Configuration for Improved Resolution, *IEEE Antennas and Wireless Propagation Letters*, 2010

Abstracts

29. K. L. Yang, **V. K. Ithapu**, J. M. Oh, G. E. Ennis, C. M. Carlsson, C. L. Gallagher, B. B. Bendlin, S. Asthana, M. Sager, B. Hermann, S. C. Johnson, V. Singh, O. C. Okonkwo, ADNI, An MRI-derived disease marker is associated with conversion to MCI in middle-aged adults at risk for AD, Alzheimer's Imaging Consortium (AIC), Alzheimer's Association International Conference (AAIC), 2018
30. **V. K. Ithapu**, Decoding Deep Networks, Midwest Machine Learning Symposium (MMLS), 2017 **Finalist, Best Poster**
31. T. Vo, **V. K. Ithapu**, V. Singh, M. Newton, Multiple Hypothesis Testing with Graph-Associated Data, Center for Predictive Computational Phenotyping (CPCP) Retreat, 2017
32. **V. K. Ithapu**, R. Kondor, S. C. Johnson, V. Singh, Generalizing Statistical Leverage Scores using Incremental Multiresolution Matrix Factorization, Center for Predictive Computational Phenotyping (CPCP) Retreat, 2017
33. **V. K. Ithapu**, L. Clark, V. Singh, R. Kosciak, S. C. Johnson, Deductive Mode Finding: Tracing Back Cognitive Decline in Biomarker Positive Middle-Aged Adults, Alzheimer's Association International Conference (AAIC), 2017
34. H. Zhou, **V. K. Ithapu**, S. Ravi, V. Singh, S. C. Johnson, G. Wahba, R. L. Kosciak, S. Asthana, C. M. Carlsson, K. Blennow, H. Zetterberg, Statistical Algorithms for Harmonizing Biomarker Distributions Across Different Cohorts, Sites and Assays: Applications to CSF Measurements, Alzheimer's Association International Conference (AAIC), 2017
35. S. Ravi, **V. K. Ithapu**, V. Singh, R. Kosciak, S. C. Johnson, Machine Learning Algorithms for Experiment Design in High Dimensional Longitudinal Cohort Studies: Implications for Clinical Trials, Alzheimer's Association International Conference (AAIC), 2017
36. H. Zhou, S. Ravi, **V. K. Ithapu**, S. C. Johnson, G. Wahba, V. Singh, Hypothesis Testing in Unsupervised Domain Adaptation with Applications in Neuroscience, Center for Predictive Computational Phenotyping (CPCP) Retreat, 2016
37. T. Vo, **V. K. Ithapu**, V. Singh, M. Newton, Graph Partitioning: Mixtures for Modeling and Clus-

tering Graph-associated Data, Center for Predictive Computational Phenotyping (CPCP) Retreat, 2016

38. **V. K. Ithapu**, V. Singh, O. Okonkwo, S. C. Johnson, A Predictive Multimodal Imaging Marker for Designing Efficient and Robust AD Clinical Trials, Clinical Trials on Alzheimer's Disease (CTAD), 2014
39. **V. K. Ithapu**, V. Singh, O. Okonkwo, R. J. Chappell, S. C. Johnson, A Predictive Multimodal Imaging Marker for Efficient Sample Enrichment in AD Clinical Trials, Alzheimer's Association International Conference (AAIC), 2014
40. **V. K. Ithapu**, V. Singh, B. Austin, C. Hinrichs, C. Carlsson, B. Bendlin, S. C. Johnson, Extracting White Matter Hyperintensities in Alzheimer's Disease Risk and Aging Studies using Supervised Segmentation Methods, Alzheimer's Association International Conference (AAIC), 2013

BOOK
CHAPTERS

1. **V. K. Ithapu**, V. Singh, S. C. Johnson, Randomized Deep Learning Methods for Clinical Trial Enrichment and Design in Alzheimer's Disease, Deep Learning for Medical Image Analysis (1st Edition) ISBN: 9780128104088; Chapter 15

SELECTED
TALKS

1. Modeling hierarchical structure using multiscale factorization: Tracking early decline in Alzheimer's disease, Center for Predictive Computational Phenotyping (CPCP), 2018
2. Decoding the Deep: Exploring Class Hierarchies of Deep Representations using Multiresolution Matrix Factorization, Explainable Computer Vision Workshop, CVPR 2017
3. Machine Learning Methods for Enriching Clinical Trials in Preclinical Alzheimer's Disease, Mayo Symposium on the BRAIN Initiative, 2017
4. On the Interplay of Network Structure and Gradient Convergence in Deep Learning, Allerton Conference on Communications, Control and Computing (ALLERTON), 2016
5. A Predictive Multimodal Imaging Marker for Designing Efficient and Robust AD Clinical Trials, Clinical Trials on Alzheimer's Disease (CTAD), 2014
6. Speeding up Permutation Testing in Neuroimaging, Advances in Neural Information Processing Systems (NIPS), 2013

PATENTS

1. Estimate pinna geometry for HRTF personalization using Cartilage-Conducted Sounds, M. Khaleghimeybodi, **V. K. Ithapu**, T. Miller, US 16837940 [Filed]
2. Wearer Identification Based On Personalized Acoustic Transfer Functions, J. Donley, V. Tourbabin, **V. K. Ithapu**, US 16526498 [Filed]
3. Personalized Equalization Of Audio Output Using Machine Learning, T. Cho, **V. K. Ithapu**, US 16560894 [Filed]
4. Personalized Equalization Of Audio Output Using 3D Reconstruction Of An Ear Of A User, T. Cho, P. Hoffman, **V. K. Ithapu**, M. Mirgabheri, US 16560887 [Filed]
5. Personalized Equalization Of Audio Output Using Visual Markers For Scale And Orientation Disambiguation, T. Cho, M. Mirbagheri, **V. K. Ithapu**, US 16560869 [Filed]
6. Selecting Spatial Locations For Audio Personalization, **V. K. Ithapu**, H. G. Hassager, O. Brimijoin, US 16562228 [Filed]
7. Individualization of Head Related Transfer Function Templates For Presentation Of Audio Content, O. Brimijoin, H. G. Hassager, **V. K. Ithapu**, P. Robinson, US 16387897 [Filed]

8. Room Acoustic Matching Using Sensors On Headset, O. Brimijoin, S. A. Gari, C. Schissler, S. Colburn, **V. K. Ithapu**, P. Robinson, US 16259990 [Filed]
9. Medical Imaging System Providing Disease Prognosis, **V. K. Ithapu**, V. Singh, S. C. Johnson, O. C. Okonkwo, US Patent 9687199, 2017
10. Cooperative Multi-Monostatic Synthetic Aperture Radar, **V. K. Ithapu**, A. K. Mishra, Patent Number: 499/kol/2010

AWARDS	Interviewed by <i>CVPR Daily</i> (RSIP Vision) on interpretability of deep networks	Jul 2017
	Patent Acceptance Award, Wisconsin Alumni Research Foundation (WARF)	Jul 2017
	Finalist, Best Poster Award, Midwest Machine learning Symposium	Jun 2017
	MICCAI Student Travel Award	Jun 2014
	NIPS Student Travel Award	Oct 2013
	Machine Learning Summer School (MLSS) Travel Scholarship	Jul 2012
	DAAD - Working Internships in Science and Engineering (WISE) Scholarship	Feb 2009
	Selected among top 1% in Joint Entrance Examination (JEE)	May 2005
	Rudra Memorial Award - Topper in Higher Secondary	May 2003
	Selected for National Maths Olympiad (top 5%)	Nov 2002

TOOLBOXES AND GUIs	1. Incremental Multiresolution Matrix Factorization http://pages.cs.wisc.edu/~vamsi/projects/incmmf.html	Apr 2017
	2. Design Choice in Deep Learning (R Shiny) http://pages.cs.wisc.edu/~vamsi/DLDesignChoices	Feb 2017
	3. Rapid Permutation Testing in Neuroimaging (MATLAB) http://felipegb94.github.io/RapidPT/ (a patch for Statistical Nonparametric Mapping Toolbox, > 500 user downloads on NITRC) Earlier Version – https://www.nitrc.org/projects/efficient_pt/	Oct 2016 Jan 2014
	4. Randomized Denoising Autoencoders for Neuroimaging (MATLAB) https://www.nitrc.org/projects/rdacodes/	Mar 2015
	5. Wisconsin White Matter Hyperintensities Segmentation Toolbox (MATLAB) https://www.nitrc.org/projects/w2mhs/ (> 2100 user downloads on NITRC and SourceForge)	May 2013

REVIEWER SERVICES	<i>Area Chair (Program Committee)</i>	
	Medical Image Computing and Computer Assisted Intervention (MICCAI)	2018
	IEEE Winter Conference on Applications of Computer Vision (WACV)	2019
	<i>Reviewer</i>	
	IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)	2020–
	International Joint Conference on Artificial Intelligence (IJCAI)	2019–
	International Conference on Artificial Intelligence and Statistics	2018–
	Association of the Advancement of Artificial Intelligence (AAAI) Conference	2018–
	Medical Imaging with Deep Learning (MIDL)	2019–
	IEEE Winter Conference on Applications of Computer Vision (WACV)	2019–
	Neurobiology of Aging (Elsevier)	2018–
	Asian Conference on Computer Vision (ACCV)	2017–
	International Conference on Learning Representations (ICLR)	2017–
	International Conference on Machine Learning (ICML)	2017–

Computer Vision and Pattern Recognition (CVPR)	2016–
International Conference on Computer Vision (ICCV)	2016–
European Conference on Computer Vision (ECCV)	2016–
Neural Information Processing Systems (NeurIPS)	2015–
Transactions on Neural Networks and Learning Systems (IEEE TNNLS)	2017–
Medical Image Computing and Computer Assisted Intervention (MICCAI)	2016–
Transactions on Medical Imaging (IEEE TMI)	2016–
Journal of Magnetic Resonance Imaging (Wiley)	2015–
Neuroimage (Elsevier)	2014–

STUDENT MENTORING	Li Ding (PhS, C.S.)	Fall 2020
	Christian Steinmetz (PhS, C.S.)	Summer 2020 - Fall 2020
	Yaxuan Zhou (PhS, C.S.)	Summer 2020 - Fall 2020
	Zihang Meng (PhS, C.S.)	Summer 2020
	Ishwarya Ananthabhotla (PhD, C.S.)	Spring 2020 - Summer 2020
	Zihang Meng (PhS, C.S.)	Summer 2019
	Etienne Thuillier (PhS, E.Engg)	Summer 2019 – present
	Aderajew Mengistu (B.S Bio)	Summer 2017
	Nikhil Kannan (B.S CS/Math)	Spring 2017 - Fall 2017
	Prithvi Chowhan (B.S CS/Math)	Spring 2017
	Felipe Gutierrez-Barragan (B.S CS)	Summer 2015 - Fall 2016
	Zeyuan Hu (B.S CS/Math)	Fall 2013 - Spring 2014
Christopher Lindner (B.S CS)	Spring 2013 - Summer 2014	

COMPUTER SKILLS	Languages	: Matlab, Python, R, Mathematica, Octave
	Softwares	: PyTorch, Tensorflow, MatConvNet, AFNI, SPM, SnPM, VBM8, FSL IPE, HTML, L ^A T _E X, VisualDSP++