

# HARISH HARESAMUDRAM

harkash.github.io ◇ hharesamudram3@gatech.edu ◇ linkedin.com/in/hharesamudram

## EDUCATION

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- Georgia Institute of Technology, Atlanta, GA** Aug. 2019 -  
PhD in Electrical and Computer Engineering GPA – 3.75/4  
*Advised by Prof. Thomas Ploetz and Prof. Irfan Essa*
- Georgia Institute of Technology, Atlanta, GA** Aug. 2017 - May 2019  
Master of Science in Electrical and Computer Engineering GPA – 3.75/4  
*Master's thesis advised by Prof. Thomas Ploetz and Prof. David Anderson*
- PES Institute of Technology, Bangalore, India** Sep. 2011 - June 2015  
Bachelor of Engineering in Electrical and Electronics Engineering GPA – 8.95/10

## PUBLICATIONS

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- [1] Harish Haresamudram et al. On the role of features in human activity recognition. In *Proceedings of the 23rd International Symposium on Wearable Computers*, ISWC '19, pages 78–88, New York, NY, USA, 2019. ACM.
- [2] Nagendra Kumar et al. Iitg-indigo system for nist 2016 sre challenge. *Proc. Interspeech 2017*, pages 2859–2863, 2017.
- [3] BK Dhanush et al. Factor analysis methods for joint speaker verification and spoof detection. In *Acoustics, Speech and Signal Processing (ICASSP), 2017 IEEE International Conference on*, pages 5385–5389. IEEE, 2017.
- [4] A. Krishna et al. Software fault tolerance in pisat. In *2015 IEEE International Conference on Electronics, Computing and Communication Technologies (CONECCT)*, pages 1–6, July 2015.
- [5] Pujari Nitin et al. A regionalized collaborative community based cloud computing awareness evangelism initiative. In *eLearning and Software for Education*, volume 3, page 336, 2014.

## WORK EXPERIENCE & INTERNSHIPS

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- Georgia Institute of Technology** Aug 2018 -  
*Graduate Teaching Assistant*
- Graduate Teaching Assistant for the OMSCS Computer Vision course
  - Responsibilities: grading assignments and projects, holding office hours and moderating discussions on Piazza.
- Asurion** May 2019 - Aug 2019  
*Data Science Intern*
- Implemented neural image quality assessment (NIMA) and memorability models to rank photos for a photography service.
  - Tools: PyTorch, scikit-learn.
- Asurion** May 2018 - Aug 2018  
*Data Science Intern*
- Worked with messaging data between Customers and Experts.
  - Clustered sentence level embeddings for the identification of concise, distinct questions asked by Customers used in an autocomplete feature.
  - Tools: Tensorflow, PyTorch, Keras, scikit-learn.
- LEAP Labs, Indian Institute of Science** Aug 2016 - July 2017  
*Project Assistant*
- Developed speaker recognition, spoof detection and spoken language identification systems.

- Participated in NIST Speaker Recognition Evaluation 2016 (SRE16) & ASVspoof 2017 challenges.
- Methods & tools: ivectors (Microsoft Identity Toolkit, MATLAB), deep neural networks (Keras, Python), Kaldi.

**Deloitte Consulting USI**  
*Business Technology Analyst*

Aug 2015 - May 2016

- Functional design, implementation, maintenance and documentation of a public sector Integrated Eligibility project in the Technology Consulting division.
- Languages & tools: Java, JavaScript, Excel, JIRA, SVN.

## GRADUATE COURSEWORK

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| • Mathematical Foundations of Machine Learning | • Vision and Language                  |
| • Digital Image Processing                     | • Probabilistic Graphical Models       |
| • Statistical Techniques for Robotics          | • PDEs for Image Processing and Vision |
| • Random Processes                             | • ML with Limited Supervision          |

## ACADEMIC PROJECTS

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### Self-supervision for human activity recognition from wearables

Aug 2019 -

*Developing self-supervision pretext tasks to learn representations for time series data*

- Designing pretext tasks specifically leveraging the temporal characteristics of sensor data from wearables.
- Evaluating the performance of representations and transfer capabilities of the learned weights to a fully supervised network.
- Tools: PyTorch, scikit-learn.

### The role of features in human activity recognition

Aug 2018 - May 2019

*Understanding the role of various feature representations for human activity recognition using wearables*

*Master's thesis*

- Contrasted unsupervised representations from autoencoders against statistical, distribution-based, and supervised representations for their performance on a common backend classifier.
- Evaluated the representations from a wearable computing perspective – considering factors such as the memory footprint, number of trainable parameters, dimensionality of the representations etc.
- Advised by Prof. Thomas Ploetz and Prof. David Anderson.
- Tools: PyTorch, scikit-learn.

### Classification of acoustic scenes

Jan 2018 - Nov 2018

*Classifying audio clips into acoustic scenes such as cafe, car, train etc*

*Research project*

- Audio machine learning and deep learning approaches to identify the 'audio scene'
- Tools: Keras, PyTorch, scikit-learn.

### im2 $\LaTeX$

Jan 2018 - May 2018

*Generating the  $\LaTeX$  markup of formulae from image inputs*

*Course project*

- Studied the efficacy of variational autoencoders for generating the  $\LaTeX$  markup of the formula in the image.
- Tools: Tensorflow, Keras.

## SKILLS & INTERESTS

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- Programming Languages - Python, MATLAB, Java.
- Deep learning frameworks - PyTorch, Keras.
- Interests - reading books (fantasy and non-fiction), climbing (bouldering)
- Languages -
  - Fluent: English, Kannada, Hindi, Telugu.
  - Beginner: German