AKSHAY CHANDRASHEKARAN

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Boston, MA

RESEARCH AND WORK

ORO Labs Boston, MA
Senior Data Scientist *June 2025 - present*

- In Progress

Floma Inc. Boston, MA
Senior Software Engineer *Aug 2024 - Mar 2025*

- Architected a GenAI based approach to create messaging frameworks for marketing campaigns.
- Designed and implemented experiments and evaluation frameworks for assessing the performance of various LLMs for the tasks of generating messaging frameworks and ad content across various ad platforms.
- Implemented content refinement for various ad content formats.
- Developed a creative reasoning framework that enabled the ability to inject various kinds and levels of emotions into ad content.
- Designed and implemented a transducer-inspired conversational agentic flow for content extraction for the generation of marketing campaign briefs.
- Implemented initial PoCs for RAG for usage within Floma.
- Performed Prompt engineering for various components within the framework to optimize speed and accuracy of the system.

Twilio Inc. Boston, MA
Staff Machine Learning Scientist *June 2019 - Aug 2024*

- Developed a framework for the usage of LLMs within Twilio Segment's services
- Performed iterative prompt engineering for the generative audiences product for Twilio CustomerAI
- Developed a framework to test the outputs of LLM to ensure quality control and high product accuracy
- Researched and developed Customer Lifetime Value models for Twilio Engage.
- Developed, validated and maintained Sagemaker Workflows for various models used in Twilio Engage.
- Developed of ML workflows using Kubeflow and Temporal for enabling Custom Vocabulary.
- Architected and developed ML Workflows using Kubeflow for speech recognition models powering Twilio transcriptions.
- Accelerated the optimization of neural network-based speech recognition models.
- Performed development and maintenance of Model Registry for speech models.
- Developed and managed the manual transcription pipeline of TranscribeMe and Appen.

Capio Inc. Belmont, CA
Speech Scientist *June 2017 - June 2019*

- Accelerated the optimization of speech recognition models based on neural networks.
- Performed rapid development of Speech recognition acoustic and language models for multiple low-resource languages.
- Integrated automated hyper-parameter optimization techniques for ASR model combination.
- Performed exploratory work on online speaker change detection.
- Integrated dynamic word addition to online speech recognition.
- Integrated automated hyper-parameter optimization for decoder hyper-parameters.

- Performed modularization and packaging of Model Updater code using python.
- Performed exploration of model and feature architectures for improved performance and throughput for speech recognition systems, and made relevant changes to the source code of the speech recognizers based on the results of the experiments.

Carnegie Mellon University, Silicon Valley Moffett Field, CA
PhD. Candidate *Jan 2012 - Dec 2019*

- Researched automated multi-objective hyperparameter optimization for speech recognition.
- Performed development and analysis of methods to utilize validation curves from previous hyperparameter configurations to predict the terminal performance of the current configuration.
- Developed a novel hierarchical optimization technique for feature, model, and decoder hyper-parameters to jointly optimize towards word error rate and computational efficiency.
- Developed speech recognition systems for low resource languages.
- Worked on speech recognition on mobile and embedded platforms.
- Developed deep neural network acoustic models for Android platform using openCL.
- Developed LSTM acoustic model implementation using openCL.

Baidu SVAIL Sunnyvale, CA
Research Intern *May 2016 - Aug 2016*

- Worked on importance sampling-based data sampling techniques to improve training time for speech recognition.

Lenovo San Jose, CA
Research Intern *Oct 2013 - June 2014*

- Developed a software framework for multimodal interaction for applications in mobile devices.
- Co-inventor in three resultant patents.

Carnegie Mellon University Pittsburgh, PA
Graduate Assistant *Jan 2011 - Dec 2011*

- Researched on imagined speech classification using Electro-Encephalogram (EEG) signals

Carnegie Mellon University Pittsburgh, PA
Graduate Assistant *Aug 2010 - Dec 2010*

- Researched Axonal Bouton detection from images of visual cortex of a tree shrew.

EDUCATION

Carnegie Mellon University *Advisor: Prof. Ian Lane* Moffett Field, CA Ph.D. Candidate in Electrical and Computer Engineering, GPA: 3.64/4.0 *Jan 2012 - Dec 2019*

Carnegie Mellon University Pittsburgh, PA
M.S. in Electrical and Computer Engineering, GPA: 3.63/4.00 *Aug-2011- Dec 2011*

Vishwakarma Institute of Technology Pune, India
B.E. in Electronics and Telecommunication, CPA: 8.1/10 *Aug 2006 - May 2010*

PATENTS

1. A. Raux, A. Chandrashekaran,"*Multi-Modal Fusion Engine*" (2014)
2. A. Raux, A. Chandrashekaran, "*Selecting Multimodal Elements*" (2014)

3. A. Raux, A. Chandrashekaran, "*Identification of User Input Within an Application*"" (2014)

PUBLICATIONS

1. A. Chandrashekaran, I. Lane, "*Auto-ML for Automated Optimization of Speech Recognition on Mobile Devices*", GTC 2018 (Poster)
2. K. Han, A. Chandrashekaran, J. Kim, I. Lane, "*Densely Connected Networks for Conversational Speech Recognition*", Interspeech 2018
3. K. Han, A. Chandrashekaran, J. Kim, I. Lane, "*The CAPIO 2017 Conversational Speech Recognition System*", ArXiv Preprint *1801.00059*
4. A. Chandrashekaran, I. Lane "*Speeding up Hyper-parameter Optimization by Extrapolation of Learning Curves using Previous Builds*", ECML 2017
5. A. Chandrashekaran, I. Lane, "*Hierarchical Constrained Bayesian Optimization for Feature, Acoustic Model and Decoder Parameter Optimization*", Interspeech 2017.
6. A. Chandrashekaran, I. Lane, "*Automated optimization of decoder hyper-parameters for online LVCSR*", Spoken Language Technologies Workshop (SLT 2016).
7. A. Chandrashekaran, I. Lane, "*Automated Feature and Model Optimization for Task-specific Acoustic Models*", BayLearn 2015 (Poster).
8. D. Cohen, A. Chandrashekaran, I. Lane, A. Raux, "*The hri-cmu corpus of situated in-car interactions.*", Proceedings for International Workshop Series on Spoken Dialogue Systems Technology (IWSDS 2014).
9. I. Lane, V. Prasad, G. Sinha, A. Umuhoza, S. Luo, A. Chandrashekaran, A. Raux, "*HRItk: the human-robot interaction ToolKit rapid development of speech-centric interactive systems in ROS.*" NAACL-HLT Workshop on Future Directions and Needs in the Spoken Dialog Community: Tools and Data (NAACL-HLT 2012). Association for Computational Linguistics.

TECHNICAL STRENGTHS

MLOps Frameworks: Sagemaker, Kubeflow
ML and DL Frameworks: Pytorch, Tensorflow, Keras, Scikit-Learn, Pyspark
Speech Recognition Frameworks: Kaldi, SRILM
Programming Languages: Python, C, C++, CUDA, Matlab, Java, and OpenCL

MISCELLANEOUS ACADEMIA

· Emergency reviewer for NAACL 2020.
· Reviewer for NAACL 2019 (2 papers).
· Reviewer for NAACL 2018 (4 papers).
· Reviewer for OSA Journal (1 submission).

TEACHING

How to write Fast Code Spring 2015, Spring 2016

· Lead TA for openMP and SIMD sections of the 18645-How To Write Fast Code course

CONTESTS AND AWARDS

· Emirates Travel Hackathon 2013 Winner in the Best Windows Phone App category.

· NestGSV Hackathon 2014 Vuzix Glass Winner.

OTHER ACTIVITIES

· Member of Eta Kappa Nu since Jan 2011.
· Chairperson of the ECE Graduate Organization, Silicon Valley Branch from August 2012 to July 2013.
· Committee member of the Master's Advisory Council at Carnegie Mellon University from Jan 2011 - Dec 2011.
· Executive Committee Member for IEEE Student Branch in Vishwakarma Institute of Technology from 2008-2009.
· Member of Editorial Board for the college magazine at Vishwakarma Institute of Technology from 2008-2010.

PERSONAL ATTRIBUTES

· Fluent in English, Tamil, Hindi, and Marathi.
· I enjoy hiking, reading, soccer, and playing the guitar, synthesizer, and ukelele.
· Proud and loving coparent of an Aussie Shepherd Border Collie rescue pup.