

# Akash Alok Mahajan

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## SUMMARY

Curious & enjoy wearing different hats. Background in applied statistics & signal processing. Interested in ML/data products especially audio/speech. Graduating in June 2018.

- Teaching Assistant (TA) at Stanford for Machine Learning (CS229) and Deep Learning (CS230)
- Built a custom deep learning model on radio signals, under evaluation for deployment at [SETI](#)
- Built an ECG annotation model comparable to inter-expert deviation on a public dataset 2016
- Initial data science team member at Tiger Global-funded smart vehicle startup in Bangalore 2015-16

**Languages** : Python, R, Scala, C/C++, SQL, MATLAB

**Libraries & Tools** : Tensorflow, Keras, Apache Hadoop, Spark, AWS EMR/S3, Shiny, Processing

## EDUCATION

**Stanford University, Management Science & Engineering** Stanford, CA

MS, Applied Statistics & Optimization **GPA : 3.65**

Sep 2016-June 2018

**Courses - ML** : Small Data (MS&E226), Machine Learning, AI (CS229, 221), Data Mining (CS246)

**CS** : Databases, Algorithms (CS145, 106), Computer Systems (CS107)

**Ongoing** : Digital Signal Processing (DSP)\* (EE264), NLP with Deep Learning\* (CS224n) (\*current)

**Teaching Assistant** : CS229 Machine Learning, CS230 Deep Learning\* (**co-taught by Andrew Ng**)

**Indian Institute of Technology, Madras**

Chennai, India

B.Tech., Chemical & Control Systems Engineering **GPA : 8.78/10**

July 2011-July 2015

**Courses/Projects** : Time Series Analysis, Kalman Filters, Modern Control Theory

## RESEARCH

**Attention, I'm Trying to Speak: Text-to-Speech Synthesis**

Stanford, CA

*CS224n Project, Mentors : Richard Socher, Ziang Xie*

Ongoing\*

- Implementing a single-speaker convolution & attention-based model [1][2], on the LJ Speech dataset
- Plan to explore transfer learning for synthesis in different languages from smaller [datasets](#)

**ATA Radio Signal Classification, SETI Institute+IBM Watson**

Stanford, CA

*Identifying signals from very low SNR, Advisor : Prof. Jeffrey Ullman [report] [git]*

Mar-June 2017

- Built an ensemble model - custom CNN architecture + optimization based signal tracing (Python/Keras)
- Model under evaluation to be deployed at SETI (6-class Accuracy 80%, 2-class F1 96%)

## PROJECTS

**Real-time DSP Implementation on iOS (C++)**

EE264 Project\*

- Implementing Discrete Multi-tone (DMT) communication through the iPhone audio jack

**AI-based Music Generation from Google Magenta (Python/Tensorflow) [git]**

CS221 Project

- Implemented Markov chains, RNNs language models with beam search decoding for inference

**Dynamic Memory Allocator - Implementing malloc, realloc, free (C)**

CS107 Project

- Implemented a segregated explicit free list, exceeding benchmark utilization and throughput targets

## EXPERIENCE

**Ather Energy, Data Scientist**

Bangalore, India

*Building intelligence on smart electric scooters, part of the initial team of 2*

Jul 2015-Jun 2016

Worked on initial feature roadmap & led 3 prototypes - used at the product unveiling.

- Systems to detect drivetrain damage, locate speed bumps, and profile riding styles from sensor data
- Infrastructure - CAN data parsers, initial Postgres schema, internal R/Shiny libraries
- Riding style visualization projects used to engage the early-adopter community [link]

## INTERNSHIPS

**Salesforce - Coolan (acquired in 2016), Data Science Intern**

San Francisco, CA

*Datacenter hardware monitoring : Assisting Hadoop data-pipeline migration*

Jun-Sep 2017

- Built an S3 data cataloguing tool (*python/boto3*) and setup a pilot Spark+S3 cluster on Elastic Mapreduce (EMR). Learnt Scala, Spark and Hadoop tools over the summer
- Built a pilot Spark ETL job to structure compressed JSON backups on S3, in use for migration

**Predible Health, Deep Learning Engineer Intern**

Bangalore, India

*PoC for automated QT interval annotation of heart ECG waveforms using CNNs*

Jun-July 2016

- Built a custom 1-D convolution based CNN architecture on [MIT-Physionet](#) dataset
- Performance comparable to human inter-expert deviation on dataset (Mean +/- SD : 18 +/- 19.6ms)