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Summary

- ⋆ Proficient is Speech Recognition, Deep Learning, Machine Learning techniques
- ⋆ MS (Research) from the Indian Institute of Technology, Madras with specialization in Speech Recognition
- ⋆ Overall 7 Years (3 Years in Academia & 4 years in Industry) of experience in Speech Recognition and related domains.
- ⋆ Currently working as Chief Engineer at Samsung R&D Institute India, Bangalore
- ⋆ Successfully developed and deployed Speech Recognition solution for S-Voice Personal Assistant

Experience

Chief Engineer, Intelligent Systems, S-Voice ASR, Samsung R&D Institute, Bangalore, India — Dec 2012 - Present

My primary contribution is in developing commercial quality Speech Recognition system for Samsung S-Voice, Voice Assistant. We have successfully developed and deployed Speech Recognition solution for major English languages. I have worked on all the modules of Speech Recognition and helped to setup a pipeline for developing and improving overall experience with speech recognition solution. I have also worked on developing high quality speech synthesis system by combining unit selection based method and statistical parametric synthesis techniques.

- ⋆ **Acoustic Modeling** : Experience in training, optimizing Deep Neural Network (DNN) based acoustic model.
  - Had setup the data augmentation pipeline by adding several noise profiles
  - Trained a best deployable acoustic models for various target environments (mobiles, cars, television)
- ⋆ **Language Modeling** : Data collection and preparation, Model optimization, Domain adaptation, Handling OOVs, Context aware language model, Domain Classification
  - Helped to setup the Language Model training pipeline
  - Optimized/Adapted the models to improve the performance of Speech recognition on targeted domains (call, music, navigation, TV etc)
  - Improved the performance of the model on Name recognition and Homophone Disambiguation
  - Experimented with techniques to effectively handle the Out of Vocabulary words
  - Optimized the model to perform better when the context is available.
  - Experimented with several techniques to incorporate and use the count based language model, Context Free Grammar and NN based language models
- ⋆ **Embedded Solution** : Model training, Model compression and optimization, Confidence scoring module
  - Trained a low memory footprint acoustic model for embedded devices.
  - Added the confidence scoring module to help to identify the possible speech recognition failures. Experimented with several techniques to reduce FA and FR.
- ⋆ **Data Collection** : Data preparation, Data collection, Data Evaluation, Co-Ordination
  - Coordinated with relevant teams for data preparation for acoustic and language model
  - Setup the auto transcription evaluation and helped to prepare transcription preparation guidelines.

- ⋆ **NLU, Dialog Manager** : Collaborate with NLU team and ASR Integration
- ⋆ **Text to Speech** : Improved the unit selection based synthesis by adding statistical join cost (Dec 2012 - Dec 2013)

Teaching Assistant, Electrical Department, Dec 2009 - Nov 2012
Indian Institute of Technology-Madras, Chennai, India

- ⋆ For Courses: Digital Signal Processing (DSP), Analog and Digital Signal Processing, Speech Processing

Software Engineer Jul 2005 - Dec 2009
Hewlett-Packard, Bangalore

I was a member of the team working on Distributed File System targeted for Cloud Computing environment. Primary development was in C++, Python on Linux based operating system.

Education

Master of Science (MS) by Research, Department of Electrical Engineering,
Indian Institute of Technology, Madras (IITM), 2012
Thesis: Rapid Speaker and Environment Adaptation in Feature Space for Speech Recognition
Thesis Advisor: Prof. S. Umesh
CGPA: 8.0/10

Bachelor of Engineering (B.E), Department of Electronics and Communication
National Institute of Engineering, Mysore, 2005
Percent: 78.5/100

Skills

Domain Knowledge	:	Speech Recognition, Text to Speech, Deep Learning, Machine Learning, Natural Language Processing
Programming	:	C, C++, Python, Bash
Tools	:	Kaldi, SRILM, OpenFst, OpenGrm, CMU-Sphinx, Tensorflow, Keras, Festival, HTS, HTK

Publications

- ⋆ D. S. Pavan Kumar, **R. Bilgi** and S. Umesh, "Non-negative subspace projection during conventional MFCC feature extraction for noise robust speech recognition," Communications (NCC), 2013 National Conference on, New Delhi, India, 2013, pp. 1-5.
- ⋆ Bharghav. Ch, Neethu. M. Joy, **R. Bilgi** and S. Umesh, "Subspace modeling technique using monophones for speech recognition," Communications (NCC), 2013 National Conference on, New Delhi, India, 2013, pp. 1-5.
- ⋆ **R. Bilgi**, Vikas Joshi, S. Umesh, G. Luz, B. Carmen, Robust Speech Recognition through the selection of Speaker and Noise transforms- Proceedings of ICASSP 2012, Kyoto, Japan
- ⋆ V. Joshi, **R. Bilgi**, S. Umesh, G. Luz, B. Carmen, Noise and Speaker Compensation in Log Filter Bank Domain- Proceedings of ICASSP 2012, Kyoto, Japan
- ⋆ V. Joshi, **R. Bilgi**, S. Umesh, G. Luz, B. Carmen, Sub-band Level Histogram Equalization for Robust Speech Recognition-Proceedings of Interspeech 2011, Florence, Italy
- ⋆ V. Joshi, **R. Bilgi**, S. Umesh, B. Carmen, G. Luz, Efficient Approach to Speaker and Noise Normalization-Proceedings of Interspeech 2011, Florence, Italy