Abhishek Niranjan

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Education

- **Indian Institute of Technology(IIT)** — Kharagpur, India
  Bachelor + Master of Technology in Computer Science; — *July 2013 – July 2018*

Experience

- **Samsung Research Institute** — Bangalore, India
  Lead Engineer — *Mar 2020 - Present*
  - **Whisper Speech Recognition**: Bixby is a voice assistant indigenous to Samsung smart devices. As a part of Automated Speech Recognition(ASR) team, built a speech-to-whisper conversion system using CycelGAN to generate synthetic whisper signals to augment training data. Research paper accepted in INTERSPEECH 2020.
  - **Speech-to-Speech Translation**: Presently working on speech translation problem involving conversion of Korean audio signal features to English audio signal features. Using Transformer model as the fundamental sequence-to-sequence architecture with addition of auxiliary decoders to train on parallel tri-phone aligned data.

  Senior Software Engineer — *Jun 2018 - Mar 2020*
  - **Grapheme-to-Phoneme (G2P)**: Built and deployed Copy-Augmented Encoder-Decoder Bi-LSTM based architecture to achieve state-of-the-art results on G2P conversion problem. Paper was published in ASRU 2019.
  - **Grammatical Error Correction(GEC)**: Developed and deployed a sequence-to-sequence model for Bixby's inverse text normalization (ITN) module. Modified Transformer architecture to handle attention from multi Encoders in an hierarchical fashion for on-device processing in smartphones.

  Technologies: TensorFlow, PyTorch, Keras, Shell Scripting
- **Amplus Solar** — Gurgaon, India
  Data Science Intern — *May 2017 - July 2017*
  - **Soiling Rate**: Photovoltaic plants experience soiling phenomena which affects the power generation. Developed an algorithm to compute the soiling rate from limited data to devise a *cost-optimized* cleaning schedule of PV plants.
  - **Power-Generation Forecasts**: Engineered a forecasting module to predict hourly active power generation by a PV plant using *gradient boosted trees.* achieving a correlation of 0.97; Augmented the feature set by utilizing OpenWeatherMap API.
  - **Power-BI Reports**: Automated the generation of daily visualization reports of Solar Plants portfolio in *Power BI* by connecting MySQL server hosted on AWS EC2 instance. Built a GUI application using *PyQt*4 to facilitate the data downloading from multiple dashboards.

  Technologies: NumPy, Pandas, Scikit-Learn, PyQt
- **Bidgely Technologies** — Bangalore, India
  Data Science Intern — *May 2016 - July 2016*
  - **Vacation Detection**: Bidgely's energy disaggregation technology helps consumers and utilities to adopt eco and pocket friendly consumption. Devised a sliding window algorithm to predict the vacation instances of the residents in *MATLAB with precision >95% and recall >70%,* which got incorporated into production
  - **Refrigeration Consumption**: Worked on the energy disaggregation module to compute refrigerator consumption from low resolution energy data, which was pushed to disaggregation pipeline.

  Technologies: MATLAB
- **Outsy Inc.** — Mumbai, India
  Application Developer Intern — *May 2015 - July 2015*
  - **Information Retrieval**: Outsy is a lifestyle and event recommendations android application. Extracted artists' names from 15,000 Facebook textual posts using *Stanford POSTagger* after NLTK assisted pre-processing; Generated artists' profile database using *Wikipedia API, Youtube API, and SoundCloud API.*

  Technologies: Python, Django, NLTK, Graph API

Projects

- **Sign Language Translation**: Translation of American sign language gestures to text using flex sensing gloves.
- **Data Extractor from 2D Plots**: A graph extractor that detects plots in any PDF and digitizes the graphs.
- **Optimal Bidding**: Cost optimization algorithm employing solar power prediction to manage a gated community's electricity requirements; Our algorithm secured 1st place in the Inter-IIT 2018 data science competition.

Publications

- G P R Reddy, Gowtham P V, **A Niranjan**, K Saranu, R Sarma, M A B Shaik, P Paramasiyam. *Whisper augmented speech recognition system using CycleGAN as speech to whisper domain transfer.* INTERSPEECH 2020
- **A Niranjan**, M A B Shaik. *Improving grapheme-to-phoneme conversion by investigating copying mechanism in recurrent architectures.* ASRU 2019
- A Mullick, A Bhandari, **A Niranjan**, N Sekhar, S Garg, R Bubna, M Roy *Drift in Online Social Media* IEMCON 2018
- Mayank Singh, **A Niranjan**, D Gupta, N A Bakshi, A Mukherjee, P Goyal. *Citation sentence reuse behavior of scientists: A case study on massive bibliographic text dataset of computer science.* JCDL 2017