




# Kanhaiya Kumar

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## EDUCATION

Indian Institute of Technology, Bombay | CPI: 9.05/10.0

Mumbai, India

Dual Degree: Bachelor's (Major Electrical & Minor Computer Science)+Master's (Signal Processing) 2013-18

## AWARDS & ACHIEVEMENTS

- Project Incentive Award for extra productization effort in two commercial product releases Feb '22
- Received Samsung's excellence award for enhancing software development ecosystem Sep '21
- Cleared Samsung's Software competency test, professional level, ~ 1% pass-rate, twice in a row Sep '19
- Only one to get **AP grade** for exceptional performance in a core course (out of 143 students) Apr '15
- Secured **All India Rank 535** in JEE Advance 2013 (IIT-JEE) among 150,000 selected students June '13

## CORPORATE WORK EXPERIENCE

Samsung R&D Bangalore | Lead Software Engineer

Aug'18-present

- Offline Commands: Slot normalizer for multiple capsules(apps), fully offline/on-device solution, successfully deployed on latest flagship mobile device(S22), for both en-US & Ko-KR (Android, Java)
- Contextual NLU: Partial utterance matching on dynamic contextual data for visual devices(like TV). Deployed for **en-US, Korean and European languages** after clearing all release cycles. (VScode, c++)
- Named Entity Correction: Developed multiple fuzzy matching solutions using **ULA**(Universal Levenshtein Automata) and **FAISS** by facebook, corrected ~ 30% ASR mistakes on a 20K test data-set (Jupyter)

Samsung Electronics(South Korea) | Senior Software Engineer

Jan-Mar '19

- REDI Robot: Developed 2D Navigation module, used Dynamic-Window Approach(DWA) to generate velocity vectors for 2 wheels, simulated on Unity and did hardware testing, **Best contributor** award (C#).

Tessact | Machine Learning Intern

Dec'16- Jan'17

- Vehicular Licence plate recognition system: Developed RPN(Region Proposal Network) like architecture to generate proposals, used pre-trained LSTM network to recognize alpha-numeric sequences (TensorFlow).

Walt Disney India | Research Intern

May-June'16

- Revenue prediction system, to better align product orders from multiple vendors(MySQL, LSTM, Tkinter).
- Proposed personalized **product recommendation**, used collaborative & content based filtering techniques.

## KEY PROJECTS

- **Children's speech assessment**: Designed language model & achieved 7.26% WER and 74.03% miscue detection rate compared to 16.81% and 43.4% respectively for **Google's Speech Engine**. Spring 2018
- **Audio Visual Speech Recognition** : Combined visual cues with audio features and trained an LSTM network with CTC loss; improved WER by **5%** compared to audio only network. Spring 2017
- **Video Stabilization**: Used SIFT for salient features and RANSAC for estimating the motion model between consecutive frames; ranked amongst **top 3** in a batch of 43 groups. Spring 2016
- **Inverted Pendulum**: Improvised LQR feedback controller, fabricated a PCB to stabilize the pendulum, reducing hardware cost **500 times**, deployed in Control Systems Lab as regular curriculum. Spring 2016

## LIST OF PUBLICATIONS

- K. Sabu, **K. Kumar**, and P. Rao, "Improving the Noise Robustness of Prominence Detection for Children's Oral Reading Assessment", Proc. of NCC, Feb 2018, Hyderabad, India. Feb '18
- K. Sabu, **K. Kumar**, and P. Rao, "Automatic detection of expressiveness in oral reading", Show & Tell demonstration, Interspeech, Hyderabad, India. Sep '18

## SKILLS AND ACADEMIC INTERESTS

- **Courses**. Advanced Machine Learning, Data Structures and Algorithms, Applied Linear Algebra, Data Analysis and Interpretation, Automatic Speech Recognition, Computer Vision, Medical Image Processing.
- **Tools & Languages**. VS Code, Android, IntelliJ, Jupyter, GitHub, Java, Python, C++, MySQL, Shell.