Sagar Gubbi

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Technical Interests

Inclusive Language Technology for Reaching Global Users

Education

2015 – 2021 (January – March)
Ph.D. Electrical and Communication Engineering,
Indian Institute Of Science, Bangalore.
GPA 8/8

2011 – 2013 (August – July)
M.E. Electrical and Communication Engineering,
Indian Institute Of Science, Bangalore.
GPA 7.5/8 (Rank 1)

2007 – 2011 (September – June)
B.E. Electronics and Communication Engineering,
Sri Jayachamarajendra College of Engineering, Mysore, India.
GPA 9.8/10 (Rank 1)

Employment

2021 – now (August)
Postdoctoral Researcher,
Google Research India, Bangalore.
My research focus was on multilingual, multimodal models with the aim of building inclusive and responsible language technologies for the next billion users. I worked on methods to synthesize locale-specific adversarial queries using LLM pipelines for automated red teaming of GenAI models for cold-start languages and locales. This was used for evaluating Bard i18n prior to launch across 40 locales. I also worked on UI grounded instruction following for helping novice internet users get things done on the phone by transforming FAQ pages to step-by-step demonstrations overlaid on the UI.

2021 – 2021 (April – August)
Consultant,
ARTPark, Bangalore.
I was involved in setting up a simulation framework for training robot controllers using reinforcement learning. I also contributed to our entry to the AVATAR X-Prize robot telepresence competition by reducing video streaming latency.

2013 – 2014 (August – December)
Technical Associate,
Robert Bosch Centre for Cyber-Physical Systems, Bangalore.
I was involved in the design of an ambulatory electrocardiograph for neonatal monitoring using an embedded bluetooth low energy platform. I also built an Android app that visualizes the ECG signal and implemented an adaptive filter that reduced power-line noise by 24 dB.

Publications

S. Gubbi, P. Talukdar, and S. Narayanan, "**UGIF-Dataset: A New Dataset for Cross-lingual, Cross-modal Sequential actions on the UI**," *Annual Conference of the North American Chapter of the Association for Computational Linguistics*, 2024 (under review).

S. Gubbi, R. Upadrashta, and B. Amrutur, "**Translating Natural Language Instructions to Computer Programs for Robot Manipulation**," *IEEE International Conference on Intelligent Robots and Systems*, 2021.

S. Gubbi, A. Biswas, R. Upadrashta, V. Srinivasan, P. Talukdar, and B. Amrutur, "**Spatial Reasoning from Natural Language Instructions for Robot Manipulation**," *IEEE International Conference on Robotics and Automation*, 2021.

S. Gubbi, R. Upadrashta, S Kolathaya, and B. Amrutur, "**Multi-Instance Aware Localization for End-to-End Imitation Learning**," *IEEE International Conference on Intelligent Robots and Systems*, 2020.

S. Gubbi, R. Upadrashta, S Kolathaya, and B. Amrutur, "**Teaching Robots Novel Objects by Pointing at Them**," *IEEE International Conference on Robot and Human Interactive Communication*, 2020.

S. Tirumala, S. Gubbi, K. Paigwar, A. Sagi, A. Joglekar, S. Bhatnagar, A. Ghosal, B. Amrutur, and S. Kolathaya, "**Learning Stable Manoeuvres in Quadruped Robots from Expert Demonstrations**," *IEEE International Conference on Robot and Human Interactive Communication*, 2020.

S. Gubbi*, S Kolathaya*, and B. Amrutur,"**Imitation Learning for High Precision Peg-in-Hole Tasks**," *IEEE International Conference on Control, Automation and Robotics*, 2020.

S. Gubbi and B. Amrutur, "**One-Shot Object Localization Using Learnt Visual Cues via Siamese Networks**," *IEEE International Conference on Intelligent Robots and Systems*, 2019.

S. Gubbi and B. Amrutur, "**Scene text detection for augmented reality: character bigram approach to reduce false positive rate**," *CSI Transactions on ICT*, 2018.

S. Gubbi, A. Gupta and C. S. Seelamantula, "**How much can a Gaussian smoother denoise?**," *Proceedings of the Tenth Indian Conference on Computer Vision, Graphics and Image Processing*, 2016.

S. Gubbi and B. Amrutur, "**Adaptive Pulse Width Control and Sampling for Low Power Pulse Oximetry**," *IEEE Transactions on Biomedical Circuits and Systems*, 2015.

S. Gubbi and B. Amrutur, "**All Digital Energy Sensing for Minimum Energy Tracking**," *IEEE Transactions on VLSI Systems*, 2015.

H. Rao, D. Saxena, S. Kumar, S. Gubbi, B. Amrutur, P. Mony, P. Thankchan, K. Shankar, S. Rao and S. R. Bhat, "**Low power remote neonatal temperature monitoring device**," *BIODEVICES, 7th International Conference on Biomedical Electronics and Systems*, 2014.

Skills

ML	LLM pipelines in Python, annotation UI
Web	Webapps in Python (Django)
Mobile	Android libraries and apps in Java
Gaming	Indie games in C

Awards and Academic Honors

- IBM Watson Student Showcase competition, 2015 (my project on predicting if a StackOverflow question is fact/opinion based was among the top 5 cognitive apps submitted to the competition).
- Visveswaraya PhD fellowship, 2015-2020 (awarded by MeitY, Government of India to PhD students in the areas of Electronics System Design and IT enabled services).
- Indian Institute Of Science Alumni Medal for academic achievement, 2013 (awarded to the first rank holder in the M.E. Microelectronics stream).

- Winner of the Cadence Design Contest, 2013 (my design was placed first among 133 entries from 45 academic institutions across India).
- Ministry of Human Resource Development Graduate research scholarship, 2011-2013.
- B.S. Keshav Kishan Memorial Endowment Medal for academic achievement, 2011 (awarded to the first rank holder in the B.E. Electronics and Communications stream).
- All India Rank 3 in GATE 2011 (Graduate Aptitude Test for Engineering is taken by over 100,000 engineering graduates in India to get into graduate schools).
- Rank 2 in K-CET 2007 (Karnataka Common Entrance Test is taken by over 40,000 high school students in the state of Karnataka to enter professional undergraduate programs).

Selected Press

- **Times Of India** (2015): "IISc researchers devise all-digital circuits." Aparajita Ray, *Times Of India,* May 18, 2015.
- **Indian Express** (2015): "Running out of smartphone battery? A new digital circuit could fix all of that." Amitabh Sinha, *Indian Express,* June 7, 2015.
- **Education Times** (2015): "The digital sous chef." Rahat Bano, *Education Times,* Jan 19, 2015.

References

Available upon request.