Shashi Kant Gupta

Data Scientist (Machine Learning Engineer 3)
Conversational AI, RingCentral Innovation (India)

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EDUCATION	**Indian Institute of Technology**, Kanpur, India	Jul '16 - Jul. '21
	Major: *Bachelor's + Master's (Dual Degree) in Electrical Engineering*	[master thesis]
	*Master GPA: 10.0/10.0	Bachelor GPA: 8.9/10.0*	
	Minor Degrees: 1. *Machine Learning and Applications* 2. *Cognitive Science*	
	Advisors: *Prof. K. S. Venkatesh, IIT Kanpur* and *Dr. Gabriel Kreiman, Harvard Medical School*	

TECHNICAL SKILLS

[Languages]: Python • C/C++ **[Software and Tools]:** PyTorch • TensorFlow • Keras • HuggingFace Transformers • Nvidia NeMo • LangChain • PyTorch Lightning • Triton Inference Server • Ray/ Ray Serve • gRPC • Falcon • OpenCV • scikit-learn • NumPy • pandas • Git • Docker • ROS • Arduino

WORK EXPERIENCE

Data Scientist (MLE-3), Conversational AI, RingCentral Innovation (India) — Jul '21 - Present

Working on Speech (majorly) and NLP related problems. My roles have encompassed both research and engineering aspects, including leadership in several Speech Team projects. Some notable contributions include:

[1] **Multi-Call Sales Analytics:** Worked on sales deal win/loss prediction and analytics using call transcripts.

[2] **Spoken Language Identification:** Developed SOTA model for Spoken LID. Developed an end-to-end system for real-time inference, integrating an inference server over bi-stream gRPC. (*P99: 130ms @64*)

[3] **Automatic Speech Recognition:** Developed models for multilingual & accented ASR. Improved offline speech-to-text pipeline integrating various components such as diarization, VAD, efficient audio processing, and context-biasing. (22% *Relative WER reduction, 5X improvement in inference time*)

[4] **Speaker Identification System:** Developed a complete end-to-end speaker identification and verification system, exposing server endpoints via REST APIs utilizing Falcon framework.

[5] **Text Punctuation Restoration:** Innovated a cutting-edge model for text punctuation restoration on ASR-predicted transcripts. Executed model quantization and optimization to accelerate inference speed.

INTERNSHIPS/ RESEARCH EXPERIENCE

Research Assistant, Kreiman Lab, Harvard Medical School, Boston, USA — May '19 - May '21
Computational Modelling of Visual Search and Attention — [paper] [code]

R&D Intern, Dr Hock Beng Lim, Centre for Smart System, SUTD Singapore — Jun '18 - Jul '18
Using Optical Flow for Localisation of UAVs in Deep Tunnel

PUBLICATIONS

[1] **Shashi Kant Gupta**, Sushant Hiray, Prashant Kukde "Spoken Language Identification System for English-Mandarin Code-Switching Child-Directed Speech", *Interspeech 2023* [paper] [code]

[2] **Shashi Kant Gupta**, Mengmi Zhang, Chia-Chien Wu, Jeremy M. Wolfe, Gabriel Kreiman "Visual Search Asymmetry: Deep Nets and Humans Share Similar Inherent Biases", *NeurIPS 2021* [paper] [code]

[3] Shivi Gupta, **Shashi Kant Gupta** "Emotion-Color Association in Biologically Inspired Deep Neural Networks", *Annual Conference of the Cognitive Science Society 2021 (Abstract)* [paper]

[4] **Shashi Kant Gupta** "Reinforcement Based Learning on Classification Task Could Yield Better Generalisation and Adversarial Accuracy", *Workshop on SVRHM, NeurIPS 2020* [paper]

[5] **Shashi Kant Gupta** "A More Biologically Plausible Local Learning Rule for ANNs", *Beyond Backpropagation Workshop - Novel Ideas for Training Neural Architectures, NeurIPS 2020* [paper]

OTHER PROJECTS

Transformer Punctuation and Capitalization Restoration [code]		March. '22
Deep Embedding Clustering For Speaker Diarization [code] [report]		March. '21 - May. '21
3D Human Pose Estimation using Multi Camera [code] [report]		Feb '20 - Apr. '20
Design and Development of Humanoid Robot [demo] [report]		Dec '16 - Apr '19

HONORS & ACHIEVEMENTS

- Founded Brain and Cognitive Society at IIT Kanpur [BCS@IITK Homepage]
- Fellowship awardee for the prestigious Khorana Program for Scholars 2019, IUSSTF
- Received Academic Excellence Award twice for outstanding academic performance (2016 & 2016-17)