# Rajat Kulshreshtha

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## Education

**Carnegie Mellon University** Pittsburgh, PA
Master of Language Technologies (Research Master's), Language Technologies Institute 2018
Focus areas: multilinguality, speech recognition, representation learning, NLP

**Indian Institute of Technology, Guwahati** Guwahati, India
B. Tech., Electronics & Electrical Engineering (with a Minor in Computer Science) 2015

## Work Experience

**Amazon AGI Foundations** Pittsburgh, PA
*Applied Scientist* Aug 2022 – Present

- Core contributor to the Nova 2 family of multimodal LLMs, leading multimodal post-training and evaluation; work shipped to production serving real-time user traffic.
  - Led spoken interaction quality in the multimodal post training workstream.
  - Drove product-aligned post-training: translated user requirements into optimization targets and shipped model updates improving real-time user experience.
- Designed and productionized evaluation, benchmarking, and release-gating pipelines, enabling faster iteration while preventing regressions.

**Telling.ai** Pittsburgh, PA
*Founding Engineer - CMU Startup* Oct 2018 – Jul 2022

- Led development of cloud-based, speech-first AI systems for longitudinal monitoring of respiratory diseases such as COPD by training models using voice and breath sounds.
- Built and maintained production-grade pipelines for data preprocessing, model training, and real-time streaming inference, ensuring safety and reliability for clinical use.
- Developed models, published peer-reviewed studies, and co-invented patents that were crucial in securing an NSF SBIR grant and series A funding.

**Goldman Sachs** Bangalore, India
*Senior Analyst, Securities Division* Jun – Nov 2015

- Trained ML models for automated order surveillance using Monte Carlo–simulated order flows.

**Marooner Technologies** Guwahati, India
*Cofounder - IIT Guwahati startup* Apr 2014 - May 2015

- Developed a virtual trial room software that allows users to try on apparel by using novel image processing algorithms to generate target apparel images on the user.

## Research Experience

**Carnegie Mellon University** Aug 2016 – Aug 2018
*Graduate Research Assistant* – Advisors: Prof. Bhiksha Raj, Prof. Florian Metze

- Adversarial robustness in ASR systems, targeting and evaluating model vulnerabilities
- Developed adaptive speech and conversation models to study early language acquisition in infants.

*Research Intern* – Advisors: Prof. Bhiksha Raj, Prof. Rita Singh Dec 2013; May – Jul 2014

- Built an information mining system for Polly, a voice-based service reaching low-literate populations in India, delivering developmental content through simple telephonic interactions.

- Published a novel method using Bayesian inference and semantic analysis for safe route planning

**Hanyang University, South Korea** *May – Jul 2013*
*Research Intern* – Advisor: Prof. Frank Rhee

- Developed iterative versions of fuzzy clustering algorithms for large-scale datasets.

## Patents

- Systems and methods for analyzing and monitoring lung function using voice and breath sound samples for respiratory care. US Patent 11,937,911 published 2024.
- Methods and systems for voice profiling as a service. US Patent App. US20210020191A1

## Publications

- Amazon AGI team incl. **R Kulshreshtha**. *Amazon Nova 2: Multimodal reasoning and generation models*, 2025
- S Kapoor*, **R Kulshreshtha***. *LLM Powered After Visit Summary* (Poster, selected for Panel Discussion). American Academy of Ophthalmology, 2024. [live demo]
- MMDA Khan, …, **R Kulshreshtha**. *Voice based monitoring of COPD*, CHEST Journal, 2021.
- O Ashraf, E Rabold, K Schlichtkrull, A Singh, S Venneti, MMDA Khan, **R Kulshreshtha**, PP Naval. *Voice based screening & monitoring of chronic respiratory conditions*, CHEST Journal, 2020.
- N Ryant …, **R Kulshreshtha**. *Enhancement and Analysis of Conversational Speech: JSALT 2017*, ICASSP 2018.
- A Ravichander*, S Rijhwani*, **R Kulshreshtha***, C Nagpal, …, LP Morency. *Preserving Intermediate Objectives: One Simple Trick to Improve Learning for Hierarchical Models*, arXiv 2017.
- AA Raza, **R Kulshreshtha**, S Gella, S Blagsvedt, M Chandrasekaran, B Raj, R Rosenfeld. *Viral Spread via Entertainment and Voice-Messaging Among Telephone Users in India*, ICTD 2016.
- **R Kulshreshtha**, V Sharma, P Singh, N Agrawal, A Kumar. *Analyzing Newspaper Crime Reports for Identification of Safe Transit Paths*, HLT-NAACL 2015.
- V Sharma, **R Kulshreshtha**, A Kumar, N Agrawal, P Singh. *Image summarization using Topic Modeling*, IEEE ICSIPA 2015.

## Academic Achievements

- Represented India at the International Junior Science Olympiad 2008 (S Korea); Bronze Medalist.
- National Topper, Panini National Linguistics Olympiad, India 2014.
- Awarded Gandhian Young Technological Innovation Award, 2014.
- Graduate Student Fellowship at Carnegie Mellon University 2016-2017.
- Awarded Institute Merit Scholarship for topping the department, IIT Guwahati 2012.
- Won Best Project Award at the Carnegie Mellon IPTSE Winter School 2013.
- Kishore Vaigyanik Protsahan Yojana (KVPY) Scholar.
- National Talent Search Examination (NTSE) Scholar.
- Rank 24 (Team trojans), ACM-ICPC, India, 2012.

## Mentorship and Community

- Reviewing - ICASSP 2026, AMLC 2023
- Invited Speaker - STEM Symposium 2020 at Fox Chapel Area High School, Pittsburgh.
- Invited to attend Jelinek Summer Workshop on Speech and Language Technology (JSALT) 2017.
- Teaching Assistant for Deep Learning (2018) and NLP courses (2017) at Carnegie Mellon University
- Volunteer - Greater Pittsburgh Community Food Bank 2024-2025