Anmol Kagrecha

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Education

- **Stanford University**   (Sept. 2020 – Aug. 2025)
  Ph.D. in Electrical Engineering
  Advisor: Prof. Benjamin Van Roy
  Awarded *Stanford Graduate Fellowship*, one of 100 doctoral fellowships awarded annually across Stanford to outstanding Ph.D. students in science and engineering

- **Indian Institute of Technology Bombay**   (July 2015- June 2020)
  B.Tech and M.Tech in Electrical Engineering
  Awarded *Institute Silver Medal* for highest academic standing in the Electrical Engineering Dual Degree (B.Tech and M.Tech) program
  Awarded *Undergraduate Research Award* for an exemplary Master's thesis

Select Preprints and Publications

Complete list available on my Google Scholar page.

- Granular feedback merits sophisticated aggregation
  A.K., Henrik Marklund, Potsawee Manakul, Richard Zeckhauser, and Benjamin Van Roy
  arXiv ↗

- SkillAggregation: Reference-free LLM-Dependent Aggregation
  Guangzhi Sun, **A.K.**, Potsawee Manakul, Phil Woodland, Mark Gales
  Annual Meeting of the Association for Computational Linguistics (ACL 2025) ↗

- Statistically Robust, Risk-Averse Best Arm Identification in Multi-Armed Bandits
  A.K., Jayakrishnan Nair and Krishna Jagannathan
  IEEE Transactions on Information Theory, August 2022 ↗

- Distribution oblivious, risk-aware algorithms for multi-armed bandits with unbounded rewards
  A.K., Jayakrishnan Nair and Krishna Jagannathan
  Advances in Neural Information Processing Systems 2019 (NeurIPS 2019) ↗

Recent Research Projects

Granular Feedback Merits Sophisticated Aggregation   Preprint ↗

- *Problem setting.* Predict a large population's distribution of feedback using feedback from a smaller number of individuals, under varying levels of feedback granularity.

- *Main claim.* Demonstrated both empirically and conceptually that as feedback granularity increases, the advantage of sophisticated aggregation methods (e.g., supervised learning) grows relative to simpler baselines like regularized averaging.

- *Dataset.* Collected feedback from ~40 annotators on questions related to social values and attitudes to evaluate different methods; dataset is available here.

- *Implementation.* Implemented modular experiments in Python using PyTorch and Hydra for structured configuration and reproducible hyperparameter sweeps. Code is available here.

- *Main empirical result.* With binary feedback, sophisticated methods offer little improvement over regularized averaging; however, with five-point feedback, sophisticated methods achieve the same performance as regularized averaging with roughly 50% fewer individuals.

- *Implications for training large language models (LLMs).* Discussed how similar principles apply to human feedback used in LLM training pipelines and argue how one could use about 20% less feedback without degrading performance.

SkillAggregation: Reference-free LLM-Dependent Aggregation   ACL 2025 ↗

- *Problem setting.* Predict reference labels from judgments of multiple LLMs in an unsupervised manner.
- *Method.* Proposed SkillAggregation, a context-dependent aggregation algorithm that infers reliability of LLM judges from their judgments. It extends classical crowdsourcing aggregation methods to a multi-LLM setting.
- *Datasets.* Evaluated the method on diverse benchmarks (HaluEval-Dialogue, TruthfulQA, and Chatbot Arena) covering hallucination detection and conversational preference judgment.
- *Implementation.* Developed the experimental pipeline in Python using PyTorch and Hugging Face Transformers.
- *Main empirical results.* SkillAggregation achieved small but consistent improvements over baselines such as majority voting and CrowdLayer in terms of accuracy: +1.79 pts on HaluEval, +0.71 pts on TruthfulQA, and +0.37 pts on Chatbot Arena.

Teaching and Mentorship

Artificial Intelligence for Reasoning, Planning, and Decision Making   (Spring 2025)
Worked as a teaching assistant with Prof. Edward Chang to design rubrics and sample responses for assignments and projects; held weekly office hours and graded deliverables.

Bandit Learning and Reinforcement Learning   (Winter 2024, Fall 2023, Fall 2022)
Worked as a teaching assistant with Prof. Benjamin Van Roy to design homework and exam problems, developed starter code for these problems, and conducted weekly office hours.

Mentor, Stanford FAST   (Sept. 2021 to April 2022)
Part of a team of graduate students who provided mentorship on science and engineering projects undertaken by students from two public schools in the Bay Area.

Department Academic Mentorship Program, IIT Bombay   (April 2017 to June 2020)
Co-headed a team of 22 mentors guiding 35+ academically underperforming students; personally mentored eight students over three years, helping them overcome academic and personal challenges.

Relevant Coursework & Programming Skills

- **Courses**: Reinforcement Learning, Information Theory, Bayesian Statistics, Optimization
- **Programming languages and frameworks**: Python, PyTorch, NumPy, Hydra, Git