Sachin Grover

https://sachingrover211.github.io
https://scholar.google.com/citations?user=GLdNdm0AAAAJ

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Professional Experience

- **Post-Doctoral Researcher** — Advised by: Prof. Heni Ben Amor
  Interactive Robotics Lab, ASU — *October 2024 – Present*
  - Developing LLM as Brain to predict parameters of Q-tables and linear policies and evaluating with Open AI gymnasium RL benchmarks. Work submitted to NeurIPS 2025.
  - Finetuning LLMs for extension of LLM as Brain to smaller models. Evaluating with OpenAI gym benchmarks.
- **Research Scientist, SRI, PARC** — Manager: Ion Matei
  Palo Alto, CA, USA — *August 2022 – June 2024*
  - Created a prototype of an embodied LLM agent to translate requests in natural language into formal representation of PDDL and generate a symbolic plan.
  - Created an end-to-end pipeline for training a medium-sized GPT. Evaluated various fine-tuning techniques for formal PDDL translation.
  - Created LLM-based function calling demos for carbon capture using StreamLit API.
  - Won and collaborated on DARPA EMHAT, to design evaluation methods for digital twins and AI agent teaming based on LLMs. Developing the system for Pandemic, a multi-agent collaborative game.
  - Collaborated on DARPA SAIL-ON, to design and develop Open-world agent capable of handling external and dynamic changes in the environment during execution.
  - Collaborated on DARPA KMASS (Knowledge MAnagement at Speed and Scale) to develop a dynamic knowledge base for 20,000 documents and design update methods to scale to millions of documents.
  - Worked on industrial partnership with Panasonic to evaluate smart factory designs for their production plants.
- **Applied Scientist Intern, Amazon** — Mentor: Ross McGowan
  Alexa NLP team, Pittsburgh, USA — *May 2021 – August 2021*
  - Improve end-to-end Spoken Language Understanding model accuracy using domain knowledge of tokens, intents and slots through embeddings learned using graph based methods such as GCNs for Alexa.
  - Showed upto 2% relative improvement compared to baseline model for internal Amazon dataset.
- **Applied Scientist Intern, Amazon** — Mentor: Grant Strimel
  Alexa NLP team, Pittsburgh, USA — *May 2018 – August 2018*
  - Design post processing techniques for language model quantization and compression.
  - Implemented an optimization model to decrease the memory footprint by 25% without effecting accuracy.
  - **Patent** – Compression of machine learned models. (Feb. 2020) US NonProvisional Patent Appl. No. 16/355,338.

Relevant Projects

- **Empirically constructing and evaluating data construction for LLM-Agents** — Prof. Ludwig Schmidt
  OpenThoughts Team — *July 2025 – Present*
  - Construct a repository of evaluations for possible agent based reasoning downstream tasks.
  - Construct data recipes for evaluating effect of data changes on agent based reasoning using LLMs.
- **Empirically evaluating data construction for fine-tuning LLMs** — Prof. Ludwig Schmidt
  OpenThoughts Team — *August 2024 – June 2025*
  - Reconstructed Mammoth, WebInstruct and OpenHermes to understand data generation techniques.
  - Developed Evalchemy, a repository of state of the art evaluations for several LLM based downstream tasks.
  - Evaluated impact on Supervised Finetuning (Post-Training) for various downstream tasks such as reasoning, by varying data size, effect of annotation etc.
- **Large Language Models as Agents** — Self Advised
  Tempe, AZ — *December 2024 – Present*
  - Designing an agent with LLM for planning complex tasks, and provide guarantees about plan accuracy using PDDL based planning techniques with language models.
  - Currently evaluating on recent state-of-the-art planning challenges – TravelPlanner and NaturalPlan dataset.

Technical Skills

- **Relevant Programming Languages:** Python, JavaScript (React and Dojo), JAVA(J2EE & J2SE), PHP, HTML, CSS, MySQL, LaTeX, Matlab, R, C and C++
- **Frameworks:** Pytorch (Intermediate), HuggingFace(Intermediate), Tensorflow (Intermediate), PDDL(Expert).
- **APIs:** NumPy, SciPy, Pandas, Scikit-learn, FastAPI, StreamLit, XGBoost, Matplotlib, Pillow, OpenCV.

Education

- **Arizona State University, Tempe** — Advisor: Prof. Subbarao Kambhampati
  Ph.D. in Computer Science & Engineering — *Completed July 2022*
- **Arizona State University, Tempe** — Advisor: Prof. Kurt VanLehn
  Master of Science in Computer Science & Engineering — *Completed December 2015*

Selected Publications & Patents

- Zhang, Y., **Grover, S.**, Mistiri, M., Kalirathinam, K., Kerhalkar, P., Mishra, S., Kumar, N., Gaurav, S., Aran, O., Ben Amor, H. (2025). Prompted Policy Search: Reinforcement Learning through Linguistic and Numerical Reasoning in LLMs. Submitted to *NeurIPS* Main Track.
- Guha, E., Marten, R., Keh, S., Raoof, N., Smyrnis, G., Bansal, H., ..., **Grover, S.**[17], ..., Schmidt, L.[50] (2025). OpenThoughts: Data Recipes for Reasoning Models. arXiv preprint arXiv:2506.04178.
- **Grover, S.**, Mohan, S. (2024), A Demonstration of Natural Language Understanding in Embodied Planning Agents using LLMs. *ICAPS Demonstrations*.
- Piotrowski, W., Chao, J., **Grover, S.**, Stern, R., Mohan, S., Douglas, J. (2024). Open World Adaptation in High Fidelity Simulated Environment. *ICAPS Demonstrations.*
- Piotrowski, W., **Grover, S.**, Perez, A. (2024). Nyx: Domain Independent PDDL+ planner for Classic Control Problems. *ICAPS, KEPS workshop*.
- Piotrowski, W., Stern, R., **Grover, S.**, Mohan, S. (2024). Self-monitoring Adaptive AI Agents Operating in Open Worlds. *AAAI Spring Symposium* on User-Aligned Assessment of Adaptive AI Systems.
- Mohan, S., Piotrowski, W., Stern, R., **Grover, S.**, Kim, S., Le, J., Sher, Y., de Kleer, J. (2023). A Framework for Agents Operating in Open, Mixed Discrete-Continuous Worlds. *AIJ*, Special track on open worlds in AI Journal.
- Piotrowski, W., Sher, Y., **Grover, S.**, Stern, R., Mohan, S.(2023). Heuristic Search For Physics-Based Problems: Angry Birds in PDDL+. *ICAPS, Application Track*. Also presented at *SOCS* 2023.
- **Grover, S.**. (2022). Human-Aware AI Methods for Active Teaming. Arizona State University, *Ph.D. Thesis*.
- Agarwal, M., Chakraborti, T., **Grover, S.**, Chaudhary, A. (2021). COVID-19 India Dataset: Parsing Detailed COVID-19 Data in Daily Health Bulletins from States in India. *Neurips MLPH* Workshop.
- Strimel, G., **Grover, S.** (2021).Compression of machine learned models. U.S. Patent No 10,970,470. Washington, DC: U.S. Patent and Trademark Office.
- **Grover, S.**, Smith, D., Kambhampati, S. (2020). Model Elicitation through Direct Questioning. *ICAPS XAIP*.
- **Grover, S.**, Sengupta, S., Chakraborti, T., Prasad, A.M., Kambhampati, S., (2020). RADAR: Automated Task Planning for Proactive Decision Support. *HCI* (Special Issue on Unifying Human Computer Interaction and Artificial Intelligence). Also presented at *ICAPS, Journal Track*.
- Strimel, G., **Grover, S.** (2020).Compression of machine learned models. U.S. Patent No 10,558,738. Washington, DC: U.S. Patent and Trademark Office.
- **Grover, S.**, Sengupta, S., Chakraborti, T., Prasad, A.M., Kambhampati, S., (2019). iPass: A Case Study of the Effectiveness of Automated Planning for Decision Support. *NDM*, 2019
- Chakraborti, T., Sreedharan, S., **Grover, S.** and Kambhampati, S., (2019). Plan Explanations as Model Reconciliation–An Empirical Study. arXiv preprint arXiv:1802.01013. *HRI*, 2019.
- **Grover, S.**, Chakraborti, T. and Kambhampati, S., (2018). What can Automated Planning do for Intelligent Tutoring Systems?. *ICAPS SPARK*
- **Grover, S.**, Wetzel, J. and VanLehn, K., (2018, June). How Should Knowledge Composed of Schemas be Represented in Order to Optimize Student Model Accuracy?. In *AIED* (pp. 127-139). Springer, Cham.
- VanLehn, K., Chung, G., **Grover, S.**, Madni, A. & Wetzel, J. (2016). Learning science by constructing models: Can Dragoon increase learning without increasing the time required? *International Journal of Artificial Intelligence in Education*, pp. 1-36
- **Grover, S**. (2015). Online Embedded Assessment for Dragoon, Intelligent Tutoring System. Arizona State University, Master's thesis.
- **Grover, S.**, Arora, K., Mitra, S.K., Text Extraction from Document Images Using Edge Information, In *2009 Annual IEEE India Conference* (pp. 1-4). IEEE