ROHIT SONKER

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WORK EXPERIENCE

Researcher *(Jan 2024 –Present)*

Auton Lab, Carnegie Mellon University (Advisor – Prof. Jeff Schneider)

AI for Nuclear Fusion

- Developed a multi-timescale **Bayesian optimization** algorithm for **experiment design** to stabilize plasma confinement at the DIII-D National Fusion Facility, achieving an 117% improvement in instability avoidance
- Modelled plasma dynamics using recurrent probabilistic neural networks and used **reinforcement learning** for control. Designed a **distributed training pipeline** in PyTorch for **scaling large model**s and **hyperparameter optimization**
- Developing a **multi-modal language time-series model** to allow **language priors for models** and **language conditioned planning**

Senior Machine Learning Scientist *(Aug 2023 – Jan 2024)*

CS DISCO – Legal Tech Company

- **Managed 3 member team** to enhance **LLM based AI services** with features like **conversations, summarization, and document tagging** to improve information retrieval from case data and building timeline of events
- Applied **reinforcement learning from human feedback (RLHF),** added **conversational memory** and **pronoun co-reference resolution** to **retrieval augmented generation (RAG) chatbot**
- Conducted **A/B tests** to validate enhancements, led to a 20% reduction in erroneous responses and improved task completion rate

Senior Data Scientist *(Jul 2019 – Jul 2023)*

PricewaterhouseCoopers (PwC) US Advisory – Pharma and Life Sciences Division

- Led a team to develop an application to generate to clinical trial text from input parameters using **Large Language Models (LLMs)**, compared **prompting** vs **fine tuning** strategies, deployed in AWS securing projects worth $2M+ with multiple clients
- **Architected** an **AWS platform** for healthcare team – created **ETL pipeline (Lambda, S3, RDS), development env (Sagemaker), deployment env (EC2)** with third party integrations – unified **10+ projects and data sources**, trained over **50+ team members**
- Created a **clinical trail design system** using **predictive models**, **simulations**, project deployed across multiple big pharma clients, yielding $500K+ in total revenue
- Created an infectious disease modelling **python package** with **unit testing**, driving multiple engagements and $300K+ revenue
- Developed a scalable **unsupervised entity-matching** algorithm as an end-to-end AWS pipeline, leveraging **Spark** for large-scale data processing, **CI/CD** workflows, **Step Functions**, **SageMaker** jobs for scheduled tasks. Also created **API service** for on-demand processing.
- Devised a **ML model monitoring system** on AWS to detect drift through automated statistical testing, applied to 10+ live models

EDUCATION

Carnegie Mellon University – School Of Computer Science *(Jan 2024 – Jul 2025)*

Master of Science by Research – Robotics : 4.0/4.0

Course work: Reinforcement Learning, Language Models, Computer Vision, Generative AI, Deep Learning

Indian Institute of Technology (IIT) Kanpur *(Jul 2014 – Jun 2019)*

Dual Degree (Bachelors + Masters) in Mechanical Engineering : 9.3/10

PUBLICATIONS

- **R. Sonker** et al. "DynaBO – Dynamics Model Bayesian Optimization for Tokamak Control" *(ICLR 2025 Submitted)*
- V Shaj, D Büchler, **R Sonker**, P Becker, G Neumann "Hidden Parameter Recurrent State Space Models For Changing Dynamics Scenarios", *International Conference for Learning Representations (ICLR) , 2022*
- **R. Sonker** et al "Adding Terrain Height to Improve Model Learning for Path Tracking on Uneven Terrain by a Four Wheel Robot," in *IEEE Robotics and Automation Letters, Jan. 2021*
- **Rohit Sonker**, Ayush Mishra, Palvika Bansal, Anup Pattnaik "Techniques for Medical Concept Identification from Multi-Modal Images", in *CEUR Workshop Proceedings and CLEF 2020 Conference Greece 2020 (Oral)*

SKILLS

Tools/Languages: C++, Python, R, SQL, Spark, Rshiny, Streamlit

ML/DL Tools : PyTorch, Keras, MLflow, Scikit Learn, Numpy, DVC

Software: GitHub, Linux, Tableau, Alteryx, Excel, Powerpoint

Cloud: AWS, GCP, Azure, Dockers, Kubernetes