DIKSHA SHRIVASTAVA

diksharaigarh57@gmail.com · diksha-shrivastava13.github.io · Research & Blog

RESEARCH INTERESTS

AI for Scientific Causal Discovery · Continual Learning in Complex World Models · AI for Science, Math, Code & Reasoning · Formal Verification & Human Oversight

EDUCATION

2021-2025 BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE

CGPA: 9.04/10 · Specialization in Artificial Intelligence

Coursework · Statistical Machine Learning, Artificial Intelligence and Machine Learning, Intelligent Model Design Thinking, Natural Language Processing, Image and Video Processing, Special Topics in Artificial Intelligence, Undergraduate Research in Computer Science

Research Work · Investigated frameworks for continual reasoning in world models. Researched failure modes of language models in discovering implicit causal structures. Developed a framework for Divergent Problem Generation with modifications to GRPO. Developed pipelines for automation of complete ML cycles from a high-level description.

RESEARCH ENGINEERING & PRODUCT DEVELOPMENT

Jun–Sept, AI Engineer, Founding Team

Can AI reason across complex world policy decisions spanning decades for maximal gain?

Product: Designed and piloted an AI-driven Decision-Making System for policy officers in 60+ countries, modeling hierarchical government initiatives as a 5-level structured world model to support strategic policy decisions.

Pipeline: Developed multi-layered agentic reasoning pipelines (54+ iterations over 200–2000 entities from unstructured reports) to track causal shifts in policy evolution.

Tools: Built 7+ AI tools—situational similarity models, graph-based retrieval, and AI-driven action plans—to surface risk factors and rank interventions by structural importance.

Inference: Explored and benchmarked reasoning methods (agentic workflows, multi-hop reasoning, few-shot planning, Monte Carlo Tree Search, graphrag, etc.) to capture implicit relationships over time.

Handover: Delivered the system to BMZ's DataLab with AI-driven recommendations, strategic planning insights, and roadmaps for SLM training on structured decision-making tasks. TECHNICAL BLOG

Feb–May,

' AI Engineer, Founding Team

2024

How can an AI system continually learn from feedback to refine information retrieval?

Product: Prototyped ai-SAP, an LLM-powered search and retrieval system for 100,000 SAP employees, unifying access to internal documentation, GitHub, and Slack.

Retrieval & Reasoning: Designed a multi-step retrieval pipeline with 15+ data readers and 13+ LLM calls, integrating filtering, recursion, and intent classification.

Optimization & Efficiency: Integrated a CI/CD pipeline on Google Cloud and enhanced LlamaIndex with custom chunking and extraction strategies, improving recall, MRR, and reducing debugging time from 14+ hours to 5 seconds.

Continuous Learning: Designed a generative feedback loop that dynamically updates answerable question metadata based on user feedback, aligning the knowledge base with evolving user needs.

Investor Presentations: Presented the product to investors at Meta, IBM, UnternehmerTUM, MTZ, AWS, and United Internet Media GmBH, demonstrating the system's capabilities. **ONSITE PITCH VIDEO**

Digital Product School, Munich with German Federal Ministry, BMZ

Bennett University (The Times Group),

India

Digital Product School with SAP, Munich

RESEARCH EXPERIENCE

	RESEARCH EAFERIENCE
	Jan–May, 2025 Research Intern, AI Reasoning
School of CSET, Bennett University	How can agents discover unseen dependencies in structured world representations?
	Continual Reasoning: Developed a memory-integrated framework for iterative self-correction in complex inference tasks.
	Rearrangement Sampling: Proposed a sampling technique that converts divergent solutions into new problem formulations, enhancing generalization across reasoning tasks.
	Execution-Guided Generation: Implemented a feedback-driven decoding pipeline where execution traces refine model-generated hypotheses, reducing error propagation.
	Automated ML Pipelines: Developed a system that dynamically generates and executes end-to-end ML pipelines from high-level problem specifications using a decision graph. TECHNICAL BLOG
	Sept–Dec, 2024 Independent Researcher, Causal Discovery
Independent	Can language models formulate ML problems from deep, interacting subsystems?
Research, Remote Nvidia-Bennett	Observation · LLMs recognize surface correlations but fail to uncover deep causal structures governing the complex, evolving world models.
	Reasoning in Holistic World Models: Designed experiments to test agent learning, adaptation, and generalization in dynamically interwoven systems represented by hybrid vector-graphs system.
	Beyond Static Models: Stress-tested frameworks for causal discovery and formal verification from abstract data of complex world models, including transduction & induction reasoning methods, symbolic regression, open-endedness and automated theorem-proving.
	Continual Learning with Dynamic Database: Designed a self-updating framework for hypothesis-driven link prediction and structured learning in evolving datasets. TECHNICAL BLOG
	May–Aug, 2022 Student Researcher, AI & Psychophysics
	How do cognitive disorders affect neural music perception?
Centre for AI, Bennett University	Neural Pattern Analysis: Applied SPM12 and PRoNTO V3.0 in MATLAB to analyze fMRI data, isolating superior temporal gyrus (STG) activity for genre-based classification.
	Machine Learning for Cognition: Designed an SVM-based classifier to distinguish neural responses to music genres, leveraging voxel-based feature extraction.
	Conference Acceptance: Selected to present at Fechner Day 2022, Sweden, showcasing ML-driven insights into music cognition and mental health applications. (<i>Withdrawn for Grant Reasons</i>) ABSTRACT WEBSITE
	FELLOWSHIPS & OPEN-SOURCE
	Jul–Oct, 2023 Core Contributor - ML
Unify.ai (YC W23), London	Built unified backend APIs (TensorFlow, PyTorch, JAX, MindSpore, PaddlePaddle) for cross-framework compatibility. Designed universal loss functions, neural network ops, and convolution layers.
	2022-2023 GOOGLE KAGGLEX FELLOW
KaggleX Fellowship	How can AI understand and generate emotions in music through symbolic representation? Explored symbolic music generation with Music Transformers, built MIDI/audio models (Librosa, Music21, LSTM), analyzed structural patterns.
	2022–2024 Google Women Engineer Scholar
TalentSprint · Google, India	Completed 2-year ML and software training, showcased projects at IIIT Hyderabad bootcamp. Received mentorship in communication, strategic planning, and design thinking.

proposed & pursued research directions

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