PANIMALAR ENGINEERING COLLEGE

An Autonomous Institution

[JAISAKTHI EDUCATIONAL TRUST]

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Bangalore Trunk Road,Varadharajapuram, Poonamallee, Chennai- 600 123

INDIA'S WOMEN CENTRIC NATIONAL LEVEL 24 – HOUR HACKATHON

TECHDIVATHON – 2.0

She blooms. She leads. She conquers

Domain:GEN AI/AGENTIC AI

Problem Statements:

S.No	Title	Problem Statement	Description
1	Agentic AI Autonomous Research Agent	Scientific literature review takes researchers weeks of manual searching.	Develop self-improving AI agents that autonomously formulate hypotheses, conduct literature synthesis, design experiments, and iterate findings through peer-reviewed validation loops.
2	Generative AI Molecular Drug Designer	Drug discovery fails 90% of candidates due to molecular instability.	Create agentic AI that generates novel stable molecules, predicts binding affinities, simulates clinical trials, and auto-files patents for viable therapeutic candidates.
3	AI Negotiation Agents for Global Trade	International trade negotiations stall due to misaligned incentives.	Build multi-agent systems where AI diplomats negotiate treaties in real-time, simulating long-term economic impacts and generating compromise proposals acceptable to all parties.
4	Self-Evolving Codebase Maintenance Agent	Legacy codebases accumulate technical debt blocking modernization.	Design autonomous AI agents that refactor entire repositories, write tests, migrate frameworks, and deploy updates while preserving business logic and performance guarantees.
5	Generative AI Synthetic Data Universe Creator	Training data scarcity limits AI model generalization across domains.	Engineer AI agents generating complete synthetic universes with physics, economies, cultures, and historical events for unlimited training data across all knowledge domains.
6	Agentic AI Personal Life Coach Swarm	Individuals struggle maintaining long-term behavioral change across life domains.	Deploy specialized AI agent swarms for career, health, relationships, and finance that coordinate holistic life optimization with daily micro-adjustments and progress tracking.
7	AI Patent Novelty and Prior Art Destroyer	95% of patent applications rejected due to overlooked prior art.	Create generative agents that systematically destroy novelty claims by generating functionally equivalent prior art across all jurisdictions and technical domains.

8	Autonomous AI Venture Capital Evaluator	VC firms miss 99% of potential unicorn startups due to pattern blindness.	Build agentic AI that discovers unknown startups, predicts 10-year outcomes using causal modeling, and autonomously invests via smart contracts.
9	Generative AI Historical Figure Resurrection	History lacks direct access to past leaders' decision-making processes.	Reconstruct agentic AI replicas of historical figures using writings, speeches, and contemporary accounts, enabling real-time strategy consultations.
10	Self-Replicating AI Knowledge Distillation Network	Domain expertise transfer requires decades of human apprenticeship.	Design fractal AI agents that recursively teach simpler versions of themselves, creating exponential knowledge dissemination across computational scales.
11	Agentic AI Global Supply Chain Orchestrator	Disruptions cascade unpredictably through global supply networks.	Deploy autonomous AI conductors that reroute materials, renegotiate contracts, and reconfigure factories in real-time during global disruptions.
12	Generative AI Constitutional Architect	Nations struggle drafting constitutions balancing competing rights.	Create AI agents simulating centuries of governance outcomes to generate optimal constitutional frameworks maximizing citizen flourishing metrics.
13	AI Autonomous Scientific Journal Editor	Peer review delays publication by 6-18 months while maintaining quality.	Build agent swarms that instantly review, validate experiments, suggest improvements, and publish verified research with full reproducibility guarantees.
14	Self-Auditing AI Truth Verification Network	Misinformation spreads faster than fact-checking across platforms.	Engineer decentralized AI agents that cross-verify claims against primary sources, physical experiments, and logical consistency in real-time.
15	Generative AI Parallel Universe Scenario Planner	Decision-makers lack comprehensive foresight across decision trees.	Generate complete alternate realities for every major decision, showing cascading consequences across economics, geopolitics, and technology.
16	Agentic AI Personalized Education Curriculum Architect	One-size-fits-all curricula fail 70% of students' learning needs.	Deploy lifelong AI tutors that dynamically construct complete educational paths optimized for individual cognitive styles, career goals, and real-world skill gaps.
17	AI Synthetic Jury for Legal Precedents	Judicial inconsistency creates uncertainty in legal planning.	Create agentic AI juries trained across jurisdictions that deliberate cases, cite precedents, and generate binding legal opinions with 99% human judge agreement.
18	Autonomous AI Art Provenance Authenticator	Art forgery costs $6B annually due to provenance uncertainty.	Build generative agents reconstructing complete ownership histories from partial records, chemical analysis, and stylistic evolution patterns.
19	Multi-Agent AI Global Climate Intervention Coordinator	Climate solutions compete destructively without coordination.	Deploy specialized climate AI agents negotiating between carbon removal, adaptation, and mitigation strategies for optimal planetary outcomes.
20	Building a Task-Level AI Playbook for Entrepreneurs	Entrepreneurs struggle matching fragmented AI tools to specific daily tasks under time pressure.	Build a single-query AI agent (using n8n or Lindy.ai) that ingests task descriptions, maps to optimal tool workflows via Zapier Central, generates step-by-step implementation guides with exact prompts/links, and auto-configures

			integrations for immediate execution.
21	Synthetic Training Data Generation for Rare Events	Machine learning models fail when they encounter rare debris types (e.g., ghost nets) for which labelled training data is scarce or non-existent, hindering global operational deployment.	Spatial-Temporal Generative AI Model: Create a GAN or Diffusion Model to synthesize photorealistic and spectrally plausible satellite image patches containing diverse, labelled marine debris targets to rapidly augment training datasets and improve model generalization.

Reviewer's Digital Signature

Reviewer's Name:
Position:
Organization:
Date:

Digital Signature: