ATLAS SKILLTECH UNIVERSITY | uGDX School of Technology

AI TRAILBLAZER

Guiding Principles for STEAM–AI Hackathon Projects

Each project should:

- **Be hands-on and prototypable in 2–3 days (hackathon time frame).**
- **Involve AI and real-world science or social impact.**
- **Encourage creative design, visualization, or artistic thinking.**
- **Be achievable with tools like Arduino, Raspberry Pi, Scratch, Python, TensorFlow Lite, Teachable Machine, or MIT App Inventor.**

Theme Categories with Project Ideas

1. AI for Environment & Sustainability

Project Title	Core Idea	STEAM Connection
Smart Waste Sorter	Use a camera and AI model (like Teachable Machine) to identify plastic, metal, paper, etc., for automatic sorting.	Science (material ID), Tech (AI model), Engg (servo sorting), Math (data classification)
AI Tree Health Monitor	Build an app that uses leaf images to detect disease or dryness levels using AI image classification.	Biology, AI and IoT
Smart Irrigation System	AI predicts soil moisture needs using sensor data + weather data, controls water pump.	Physics, ML, IoT,Design Thinking
EcoBot – Beach Cleaning Robot	Design a robot (Arduino-based) that detects waste via computer vision and collects it.	Robotics, AI Vision, Mechanical Design

2. AI and Science Exploration

Project Title	Description	STEAM Integration
AI Microscope	Use a smartphone camera and ML to identify microscopic organisms or cell types.	Biology, AI and Optics
Physics Lab Buddy	AI chatbot explains lab experiment steps or analyses graphs from sensors.	Physics, NLP and Design
AI Weather Forecaster	Predict local weather using open datasets and regression models.	Atmospheric Science, Math and AI
Chemical Reaction Predictor	Simple neural net predicts if two elements will react based on dataset of properties.	Chemistry and Data Science

AI TRAILBLAZER

Guiding Principles for STEAM–AI Hackathon Projects

Special Hackathon Formats

1. Theme-based hackathons – e.g., "AI for Earth", "AI for Inclusion", "AI for Creativity".

2. STEAM Fusion Challenge – require teams to include at least one science, one design, and one coding element .

3. AI and Art Exhibition – students present AI-generated visual or musical art.

4. Mini Research Track – projects like "AI analysis of climate patterns" or "AI for coral reef protection".

Recommended Tools & Platforms

• **Hardware:** Arduino, Raspberry Pi, ESP32, microbit, sensors (DHT11, PIR, soil moisture, IR)

• **Software / AI Kits:**
o Teachable Machine (Google) – image/sound model training
o TensorFlow Lite / PyTorch
o MIT App Inventor / Scratch for beginners
o Edge Impulse for TinyML
o OpenCV and Python

• **Creative Tools:** Canva, Tinkercad, Figma, Runway ML, DeepArt, Magenta.

Evaluation Criteria (for Hackathon)

Criterion	Weight
Innovation / Originality	25%
AI Integration Depth	20%
STEAM Linkage (Interdisciplinary)	20%
Practical Impact / Usefulness	20%
Presentation / Prototype Design	15%

ALL THE BEST