

■ EDUQUEST EXCLUSIVE 8-PAGE MASTER GUIDE

Student AI & Tech Passion Project Starter Kit

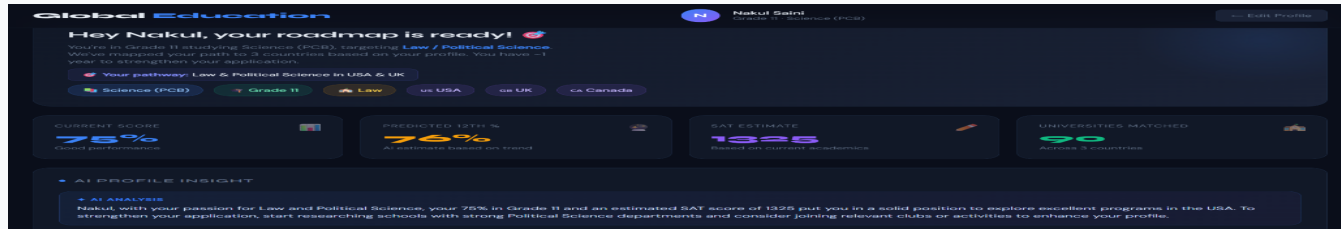
10 Curated AI/ML Project Blueprints, Full-Stack Deployment, GitHub Portfolio Standards & Hackathon Submission Guide

1. High School AI & Tech Passion Project Overview

In the era of Generative AI and machine learning, admissions committees look for students who can move beyond basic tutorials and build deployed, end-to-end applications that solve real-world problems.

- Tutorial vs Original Project: Following a generic YouTube tutorial has zero admissions value. Building an original system with proprietary data and real users is a Tier 1 credential.
- The Full-Stack AI Stack: Data Pipeline -> ML Model Architecture -> Cloud API Deployment -> Web/Mobile User Interface.

Figure 1: Full-Stack AI Engineering Pipeline & Deployment Stack



■ Deployed Tech Requirement

A live deployed application with real active users moves an applicant from Tier 4 participation to Tier 1 creator.

Module 2: 10 Curated High-Impact High School AI Project Ideas

1. Project Blueprints by Domain

Project Concept	Tech Stack & Model Architecture	Real-World Impact Focus
Automated Medical Image Classifier	PyTorch, ResNet-50 / ViT, FastAPI, React	Early detection of diabetic retinopathy or melanoma from photos.
AI Sign Language Translator	OpenCV, MediaPipe, LSTM / Transformer, Flutter	Real-time two-way translation between sign language and speech.
Autonomous Wildfire Detection Drone	YOLOv8, Edge AI / Raspberry Pi, AWS IoT	Thermal camera anomaly detection in remote forest regions.
Legal Document Summarizer	LangChain, Llama-3 / GPT-4 API, Pinecone RAG	Simplifying complex legal contracts for low-income citizens.
Precision Agriculture Crop Analyzer	TensorFlow, Convolutional Neural Networks, WebApp	Diagnosing crop leaf diseases and nutrient deficiencies for farmers.

Module 3: The End-to-End AI Engineering Pipeline

1. Engineering Architecture Steps

- Data Collection & Annotation: Scrape public APIs, utilize Kaggle / HuggingFace datasets, or build manual image labeling pipelines.
- Model Training & Fine-Tuning: Train models using PyTorch / HuggingFace Transformers; track loss curves with Weights & Biases.
- API Deployment: Wrap your model in a FastAPI endpoint and deploy to AWS, GCP, or HuggingFace Spaces.

Module 4: GitHub Repository Architecture & Documentation Standards

1. Professional Open-Source Repository Checklist

- Comprehensive README.md: Include architecture diagrams, demo GIFs, installation instructions, and performance benchmarks.
- Clean Codebase: Modular Python files (data_loader.py, model.py, train.py, app.py) with docstrings and type hints.
- Open Source License & CI/CD: Include MIT License and automated GitHub Actions testing workflows.

Module 5: Acquiring Real Users & Metric Telemetry

1. Proving Real-World Adoption

- Launch on Product Hunt & Hacker News: Gain initial user traffic and feedback from tech communities.
- Quantify Metrics: Track daily active users (DAU), API requests processed, latency benchmarks, and accuracy metrics (F1 score, AUC-ROC).

Module 6: Competitions & Hackathons (ISEF, Conrad, Congressional App)

1. Tech Competitions Matrix

Competition Name	Eligibility & Focus	Key Submission Requirements
Regeneron ISEF (International)	High School STEM / AI Research	20-page research paper, poster board, working demo.
Conrad Challenge	Tech Innovation & Entrepreneurship	Business plan, technical prototype, investor pitch.
Congressional App Challenge (US)	US High School Students	Software demo video, code repository submission.
Major League Hacking (MLH)	Global Collegiate / High School Hackathons	24-48 hour prototype sprint with live judge demos.

Module 7: Presenting AI Projects on Common App & Maker Portfolios

1. Common App Description Formatting

Example: "Lead AI Engineer & Creator, RetinoScan: Engineered computer vision model (96.4% F1-score) for retinal disease detection; deployed iOS app with 3,200 active users; won 1st Place Regional ISEF."

Module 8: AI Project Self-Assessment & Mentorship Booking

1. Technical Readiness Checklist

- Is your project deployed live with a working public URL or mobile build? (Yes / In Progress)
- Does your GitHub repository have clean documentation, demo GIFs, and installation scripts? (Yes / In Progress)

■ EduQuest AI & Tech Mentorship

EduQuest tech mentors are Silicon Valley software engineers and Ivy League CS graduates who guide students to ISEF victories and GitHub distinction.

■ Book Your 1-on-1 Strategy & Diagnostic Session

Join the EduQuest AI & Tech Passion Project Incubator.

Hotline / WhatsApp: +91 99580 41888 | **Email:** contact@eduquest.org.in | **Web:** www.eduquest.org.in