HACK KRMU 5.0

- Problem Statement ID : OPEN INNOVATION — Theme 2 (AR/VR)
- Team Name : AGARBATTI
- TEAM ID : HK-109
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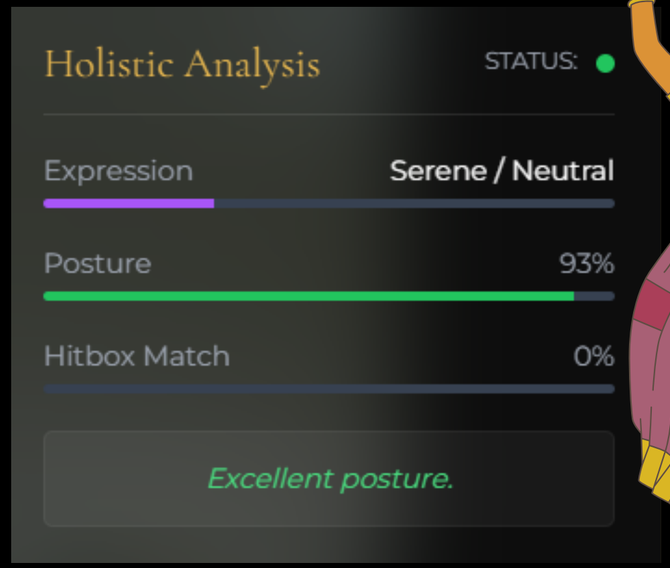
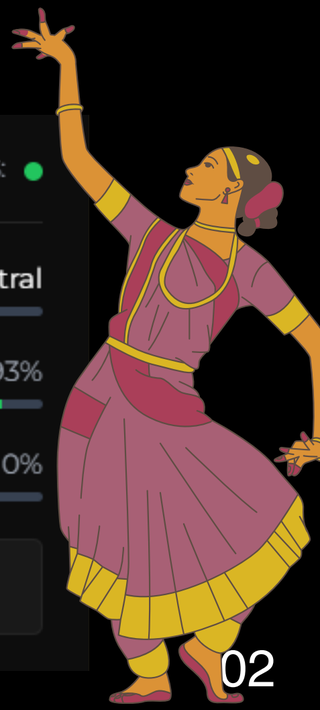
PROBLEM & SOLUTION

CLASSICAL INDIAN DANCE DEMANDS PRECISE POSTURE, MUDRAS & FOOTWORK. LEARNERS WITHOUT EXPERT GUIDANCE STRUGGLE TO SPOT & FIX MISTAKES IN REAL-TIME → SLOW PROGRESS + INCORRECT TECHNIQUE.

Kaladrishti — AI-powered self-learning platform for Indian classical dance -

- Real-time posture, expression & hitbox feedback using browser-based AI
- Beginner → Advanced levels with progressive skill sets
- Instant correction & scoring: Posture (e.g. 93%), Expression, Position Accuracy
- Accessible anywhere – no guru needed





FLOW OF SOLUTION

1. CAPTURE & DETECT: RECORD DANCE AND EXTRACT FULL-BODY KEYPOINTS
2. PROCESS & ANALYZE: CLEAN DATA AND EXTRACT MOVEMENT FEATURES
3. AI POSE MATCHING: COMPARE MOVEMENTS WITH CLASSICAL KARANA DATABASE
4. 3D VISUALIZATION: DISPLAY RECONSTRUCTED REFERENCE POSES
5. REAL-TIME FEEDBACK: HIGHLIGHT ERRORS AND SUGGEST CORRECTIONS

TECH STACK & APPROACH

CORE TECHNOLOGIES:

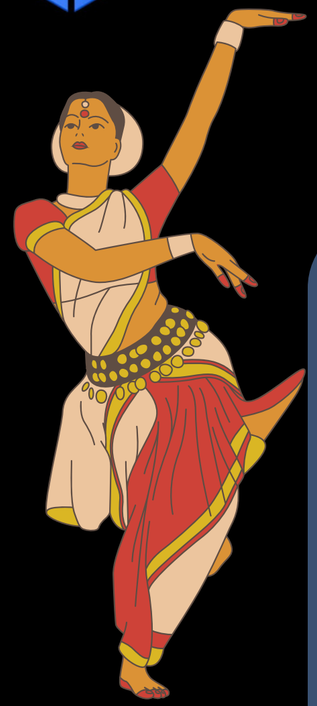
The system is built using HTML, CSS, and JavaScript for a fully web-based interface. MediaPipe is used for real-time body pose detection, while TensorFlow supports pose recognition and analysis directly in the browser. Current website is deployed using Vercel

PROCESSING & TOOLS:

Live camera input is processed by OpenCV to extract body landmarks, which are then analyzed to recognize different poses. The entire pipeline runs in a standard web browser, requiring no additional hardware.

UNIQUENESS & INNOVATION FACTOR

- FULL-BODY TRACKING: DETAILED DETECTION OF HAND GESTURES, FOOT POSITIONS, AND TORSO ALIGNMENT.
- REAL-TIME FEEDBACK: INSTANT INDICATION OF WRONG MOVEMENT OR POSTURE DURING PRACTICE SESSION.
- CLASSICAL DANCE FOCUS: CUSTOMIZED MODELS FOR INDIAN DANCE STYLES LIKE BHARATANATYAM, KATHAK, ODISSI.
- PROGRESS DASHBOARD: TRACK IMPROVEMENTS OVER TIME WITH VISUAL ANALYTICS.
- GAMIFIED SCORING: ENCOURAGE ENGAGEMENT WITH PERFORMANCE SCORES AND MILESTONE BADGES.[FUTURE ASPECT]



FEASIBILITY & CHALLENGES

FEASIBILITY

- Built with open-source tools (MediaPipe Holistic)
- Runs entirely in-browser → low cost, accessible on any device
- Scalable for Indian classical dance forms

CHALLENGES:

- Occlusions - Traditional costumes & flowing garments interfere with detection
- Environmental variance - Lighting, camera angles & background changes affect accuracy
- Data dependency - Limited diverse annotated datasets for Indian dance poses/mudras

RESEARCH & REFERENCE

Research & References:

- MediaPipe Holistic (Lugaresi et al., 2019)
- AI for Bharatanatyam Pose/Mudra Recognition (Scientific Reports 2024, IEEE/arXiv 2023–25)
- Computer Vision in Indian Classical Dance
- Cultural Heritage Preservation (UNESCO ICH principles)
- Responsible & Human-Centered AI (Google RAI Practices)

Tools Used

- MediaPipe (pose/face/hand tracking)
- Tailwind CSS + Google Fonts
- JavaScript + Canvas / MediaRecorder
- LocalStorage + Mock MongoDB
- GitHub
- VS Code
- Vercel

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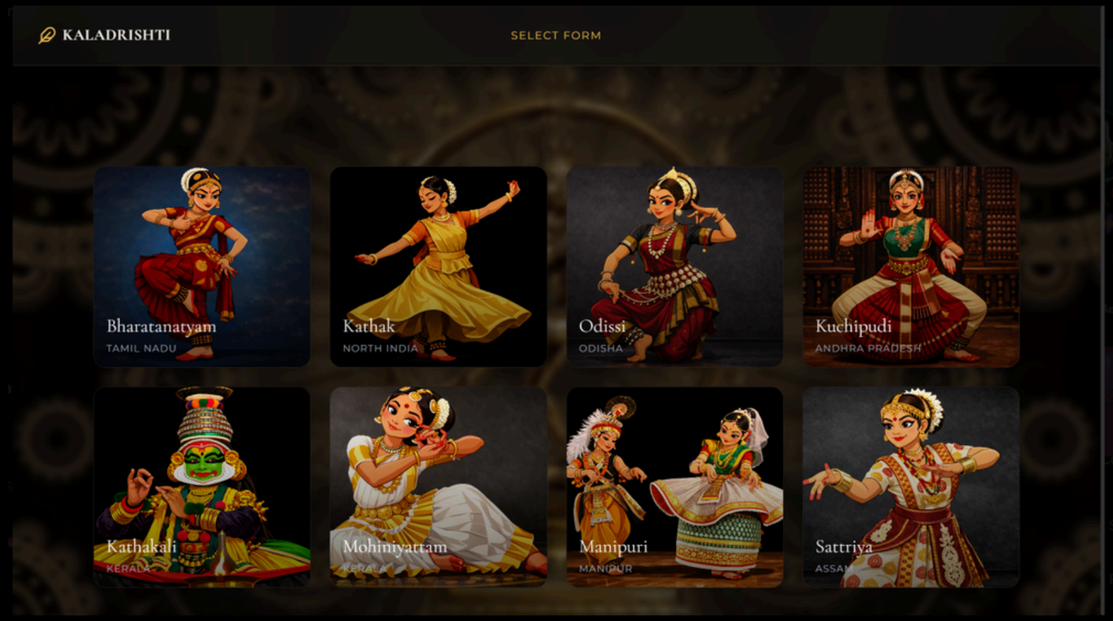
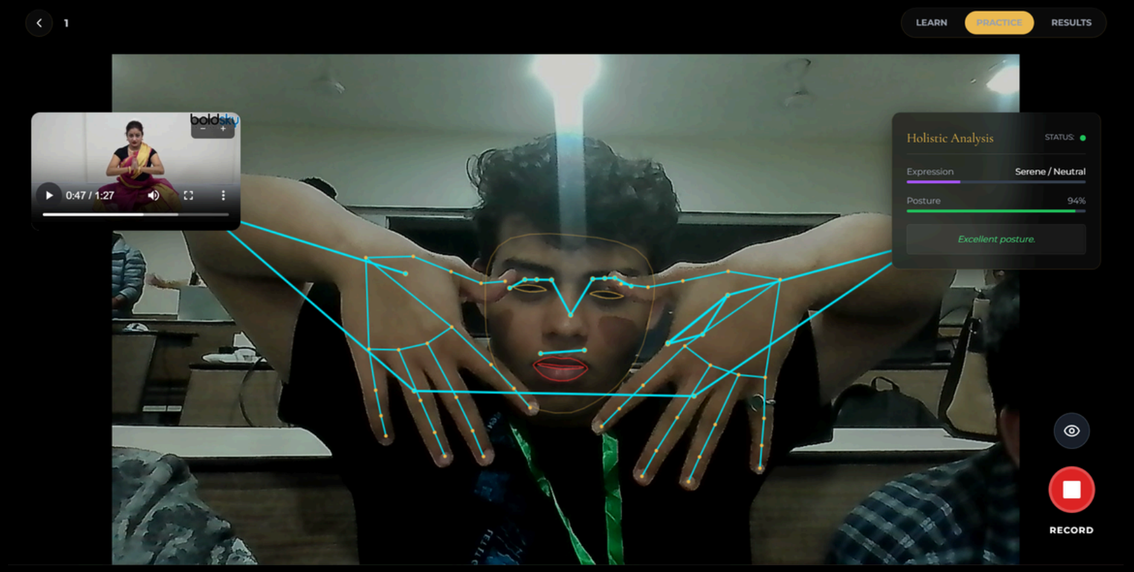
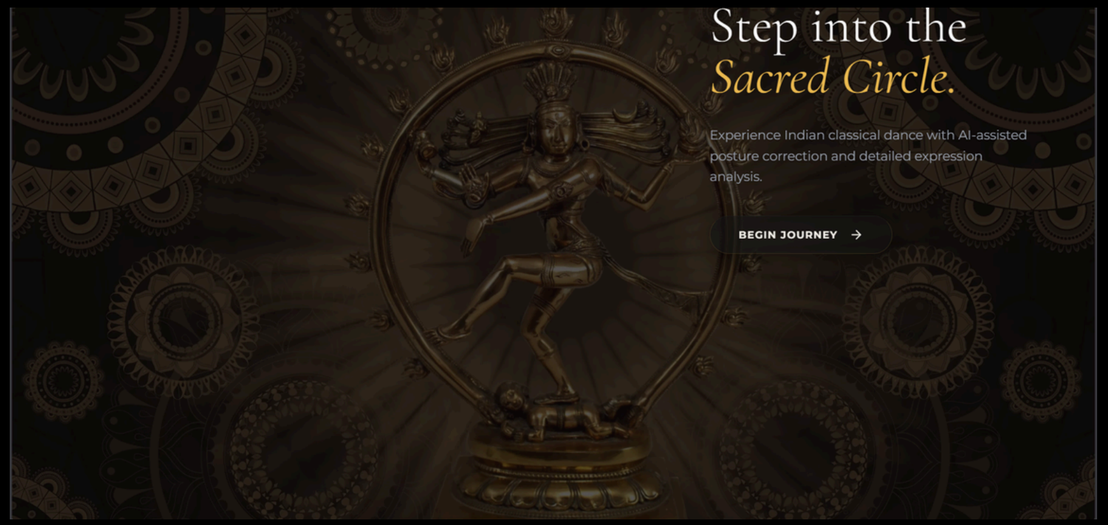
VISUAL REPRESENTATION







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THANK YOU