



PANIMALAR ENGINEERING COLLEGE

An Autonomous Institution

[JAISAKTHI EDUCATIONAL TRUST]

Approved by AICTE | Affiliated to Anna University | Recognized by UGC

All Eligible UG Programs are Accredited by NBA

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: AR/VR

Problem Statements:

| S.No | Title | Problem Statement | Description |
|------|---|---|--|
| 1 | VR Solar Technician Simulator | Learning solar installation is costly and risky. | Build an immersive VR training simulator for solar plant technicians to gain installation, safety, and troubleshooting skills. |
| 2 | Wireless AR/VR Multi-User Experience | Existing wireless can't support seamless shared AR/VR scenarios. | Propose a platform that enables ultra-low-latency AR/VR collaboration over Wi-Fi 7 or 5G, supporting dozens of users with synchronized content. |
| 3 | AR Navigation Assistant for Smart Buildings Using 5G | Finding rooms or services in large buildings remains confusing. | Develop a 5G-powered AR assistant that overlays live directions, services, and safety info on users' mobile devices for indoor navigation. |
| 4 | Virtual Reality (VR) Farming Training Simulator | Farmers lack immersive training for new agri-technologies. | A VR-based simulator provides realistic agricultural training on modern farming techniques safely. |
| 5 | Smart Tactical Helmet with Encrypted AR Communication | Soldiers need integrated visual data and secure communication during missions. | Embeds AR display, GPS, and end-to-end encrypted voice/video systems in a helmet for hands-free situational awareness. |
| 6 | AR-Enhanced Disaster Evacuation Navigation | Emergency evacuations suffer from panic and poor visibility in smoke-filled environments. | Develop AR glasses that overlay real-time escape routes, hazard warnings, and survivor locations using thermal imaging and crowd-sourced data for safe evacuation. |
| 7 | VR Therapeutic Pain Management for Chronic Patients | Pain medications have side effects and limited efficacy for chronic pain sufferers. | Create immersive VR environments that use biofeedback to guide patients through personalized pain distraction and neuroplasticity training sessions. |
| 8 | AR Remote Expert Collaboration for Field Repairs | Technicians struggle with complex repairs without expert guidance in remote locations. | Build AR headsets enabling real-time holographic overlays from remote experts, with gesture-based annotation and part identification for on-site repairs. |

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| 9 | VR Cultural Heritage Preservation Simulator | Endangered cultural sites face destruction from war and climate change. | Design VR reconstructions allowing global access to virtually walk through ancient sites with interactive historical narratives and artifact exploration. |
| 10 | AR Adaptive Learning for Dyslexic Students | Traditional reading methods fail dyslexic learners due to processing difficulties. | Develop AR glasses that transform text into dynamic 3D animations, phoneme visualizations, and multisensory reading aids customized to individual learning patterns. |
| 11 | VR Microsurgery Precision Training Platform | Surgeons lack realistic practice for delicate microsurgery without risking patients. | Create haptic VR simulators replicating tissue resistance, blood flow dynamics, and instrument feedback for sub-millimeter precision training. |
| 12 | AR Urban Planning Citizen Engagement Tool | Citizens feel excluded from city planning decisions lacking visualization. | Build AR mobile apps letting residents visualize proposed buildings, traffic changes, and green spaces overlaid on their actual neighborhoods for feedback. |
| 13 | VR PTSD Exposure Therapy with Physiological Gating | Current VR therapy overwhelms PTSD patients with uncontrolled exposure pacing. | Design adaptive VR therapy that monitors heart rate and skin conductance to gradually expose patients to triggers at their physiological comfort threshold. |
| 14 | AR Real-Time Language Immersion Translator | Language barriers persist during live conversations despite translation apps. | Create AR glasses providing real-time subtitle overlays, gesture translation, and cultural context hints during multilingual conversations. |
| 15 | VR Zero-Gravity Spacewalk Training | Astronauts lack Earth-based zero-gravity training realism before missions. | Develop full-body VR rigs simulating microgravity physics, suit constraints, and orbital mechanics for authentic spacewalk preparation. |
| 16 | AR Furniture-Free Interior Design Visualizer | Customers can't visualize furniture without physical showrooms or returns. | Build AR apps scanning rooms and projecting lifelike 3D furniture models with lighting, scale, and material interaction previews. |
| 17 | VR Collaborative Orchestra Conductor Simulator | Aspiring conductors lack orchestra access for practice and feedback. | Create VR environments with virtual orchestras responding to baton gestures, tempo variations, and dynamics in real-time. |
| 18 | AR Wildlife Conservation Field Guide | Field researchers struggle identifying species and behaviors in real-time. | Develop AR binoculars overlaying species identification, migration patterns, habitat data, and threat assessments during wildlife observation. |
| 19 | VR Architectural Heritage Restoration Simulator | Architects can't practice restoration without destroying original structures. | Design VR platforms letting architects experiment with material aging, structural reinforcement, and aesthetic restoration on digital twins of historic buildings. |
| 20 | AR Interactive Museum Artifact Storyteller | Museum visitors miss contextual stories behind artifacts due to static labels. | Create AR apps animating artifact histories, 3D reconstructions of their original use, and interactive cultural context overlays when viewed through smartphones |

Reviewer's Digital Signature

Reviewer's Name:

Position:

Organization:

Date:

Digital Signature: