Guideline: Hack4Change
Hardware Hack-a-thon, NCVTI, IIT (ISM) Dhanbad

A hardware hack-a-thon titled "**Hack4Change**" at NVCTI, IIT (ISM) Dhanbad specifically targeted towards IIT (ISM) Dhanbad students. This event aims to foster innovation, collaboration, and problem-solving skills among the participants in the domains of IoT, 3D Printing, Robotics, Electronics, Coding, AR/VR, and Mechanical.

Objective:
The primary objective of Hack4Change is to provide a platform for students to showcase their hardware-related ideas, develop prototypes, and address real-world challenges. Through this Hackathon, we aim to promote innovation, encourage interdisciplinary collaboration, and nurture entrepreneurial spirit among the participants.

Event Overview:
- Call for Ideas: students to submit their hardware-related ideas based on problem statements provided in the application form. The problem statements will focus on the domains of IoT, 3D Printing, Robotics, Electronics, Coding, AR/VR, and Mechanical.

- Shortlisting and Presentation Round: A panel of experts will shortlist the top 30 teams based on the feasibility, novelty, and potential impact of their ideas. These teams will be invited to present their ideas in front of the judging panel.

- Prototype Development: The top 15 teams will be provided with access to NVCTI labs, along with necessary resources, within a span of 21 days. They will have the opportunity to develop functional prototypes of their proposed hardware solutions at NVCTI Labs. Mentors and technical experts will be available to assist and guide the teams during this phase.

- Final Round Selection: The final round will involve the top 5 teams showcasing their functional prototypes to a panel of judges. The judging criteria will include innovation, technical implementation, potential impact, scalability, usability, and presentation skills. The top three winning team will receive cash rewards, and will be offered the chance to incubate their start-ups at NVCTI for product development. Additionally, seed funding will be provided to support their entrepreneurial journey.

Focus Area:

- **IoT-based Smart Agriculture**: Design an IoT-based solution that enables precision agriculture by monitoring and optimizing parameters such as soil moisture, temperature, and nutrient levels to improve crop yield and resource efficiency.
- **Mechanical Marvel**: Develop a novel mechanical system or device that enhances the performance, durability, or energy efficiency of a commonly used machine or equipment in industries such as manufacturing or transportation.
- **Immersive AV/VR Experience**: Create an immersive augmented reality (AR) or virtual reality (VR) experience that enhances training, education, or entertainment in a specific industry or field.

- Innovative 3D Printing Application: Utilize 3D printing technology to design and fabricate a functional prototype of a product or component that addresses a specific problem in daily life, industry, or healthcare.
- **Mining 4.0 Automation**: Develop an autonomous and efficient mining system that employs IoT, AI, and robotics to optimize mining operations, reduce accidents, and increase productivity.
- **Electric Vehicle Charging Infrastructure**: Design an innovative electric vehicle charging station or infrastructure that addresses challenges such as fast-charging, scalability, and integration with renewable energy sources.
- **Next-gen Battery Development**: Create a novel battery technology or energy storage solution that offers higher energy density, faster charging times, longer lifespan, and improved safety.
- **Smart Wearable for Health Monitoring**: Develop a wearable device that monitors health parameters, such as blood oxygen levels, ECG, or hydration status, and provides real-time alerts for potential medical issues.
- **Innovative Medical Device**: Invent a medical device that addresses a specific healthcare challenge, such as improving patient diagnostics, rehabilitation, or remote patient monitoring.
- **Miner Safety and Health**: Design a comprehensive safety system for miners that includes wearable devices, sensors, and real-time monitoring to ensure a safer working environment and early detection of potential hazards.
- **Automation in Manufacturing**: Create an automated manufacturing system that optimizes production processes, reduces human intervention, and enhances overall efficiency.
- **Advanced Robotics for Logistics**: Develop an autonomous robotic system that efficiently manages logistics and warehouse operations, including picking, sorting, and inventory management.
- **Sustainable Energy Solutions**: Design a hardware-based solution that promotes the use of renewable energy sources and encourages energy conservation in residential or commercial settings.

- **Green Drone/UAV Technology**: Build an environmentally friendly drone or UAV that reduces noise pollution, minimizes energy consumption, and incorporates sustainable materials in its construction.

Participants are encouraged to choose problem statements that align with their interests and expertise while considering the potential impact of their solutions on the respective industries or domains.

Team: A team consist of 2-5 members (IIT ISM Students only)

Timeline:
- Call for Ideas last Date: **16th Aug 2023 (Extended)**
- Presentation Round: **18th Aug 2023**
- Prototype Development Phase (21 Days): **Starting from 21th Aug 2023**
- Final Round Selection: **Second Week of Sep 2023**

Registration Link: https://forms.gle/heaYdeqBm1jzNd7R6

Any Query/Doubt:
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