



DAYANANDA SAGAR COLLEGE OF ENGINEERING



AVENTUS 2.0

#WhereTechnologyFlourishes

May 18th - 19th, 2024



DAYANANDA SAGAR COLLEGE OF ENGINEERING

ABOUT DSCE

With the vision to impart quality technical education, focusing on research and innovation and emphasizing on development of sustainability for the benefit of our society, DSCE, Bangalore has been a leader in providing its students with various opportunities to grow professionally since 1979.

It has the widest choices of engineering branches having over 20+ courses, with over 2400+ students and latest state-of-the-art facilities spread across 3 branches in Bangalore.

ABOUT AI & ML Department

The Department of Artificial Intelligence and Machine Learning (AIML) at Dayananda Sagar College of Engineering (DSCE) is dedicated to empowering students to shape the future through disruptive technologies. Our program equips students with a robust foundation in computer science and specialized knowledge in AI & ML, preparing them for dynamic careers in this rapidly growing field. Through a comprehensive curriculum and hands-on learning approach, students develop specialist skills, enhance their personality, access mentorship, and emerge ready to excel in the industry. With a focus on industry-oriented projects and mentoring from experienced faculty, our AIML department ensures students are well-prepared to make a significant impact in the AI-driven world.

- Specialize in AI & ML domains
- Develop personal skills
- Gain mentorship opportunities
- Prepare for AI-driven careers



DAYANANDA SAGAR COLLEGE OF ENGINEERING

TIMELINE FOR ENTIRE HACKATHON.

Day 1 - Saturday, 18th May

8.30 AM CHECK-IN AND REGISTRATION STARTS

9.30 AM INAUGURATION CEREMONY

10.00 AM CODING STARTS!

11.00 AM FIRST ROUND OF MENTORING

1.00 PM LUNCH

3.00 PM TECH SESSION

5.00 PM SNACKS

6.00 PM SECOND ROUND OF MENTORING

8.30 PM DINNER

Day 2- Sunday, 19th May

12.00 AM MIDNIGHT SNACKS

6:00 AM THIRD ROUND OF MENTORING

8:00 AM CODING STOPS!

8.15AM DEVFOLIO SUBMISSIONS

9:00 AM JUDGING ROUND COMMENCES

9:30 AM BREAKFAST



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House Rules

- You can choose a **plethora** of handcrafted problem statements.
- However, this is **optional** (We still encourage you to choose these problem statements)
- You can bring your **own** statements for a particular **track** and devise a solution for it.
- We **do not entertain** or shortlist existing built projects
- Our problem statements or yours- Evaluation will be done **equally and fair** for all of that particular track.



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Tracks

1 AI & ML



Gen AI focuses on creating advanced artificial intelligence systems with broad learning capabilities. Participants will delve into cutting-edge AI algorithms and applications, aiming to push the boundaries of machine learning and problem-solving.

Problem Statements





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Code: PS1

Track Code: AIML

Title: Algorithmic Underwriting for Insurance with Generative AI in Banking, Financial Services, and Insurance (BFSI)

Description: In the BFSI sector, accurate risk assessment and underwriting are critical for insurance providers to determine appropriate premiums and mitigate potential losses. Traditional underwriting processes often rely on manual analysis of complex data, which can be time-consuming, subjective, and prone to human error. The goal of this hackathon is to develop a generative AI solution that leverages advanced algorithms and machine learning techniques to streamline and enhance the underwriting process. Additionally, implement a federated learning framework to enable collaborative model training across multiple insurance providers without sharing sensitive data, addressing privacy concerns.



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Code: PS2

Track Code: AIML

Title: Harnessing Generative AI to Streamline IP Analysis for Legal Teams

Description: Intellectual property (IP) analysis is a crucial task for legal teams, involving the review and assessment of patents, trademarks, copyrights, and other IP-related documents. However, this process can be time-consuming and resource-intensive, often requiring legal professionals to sift through large volumes of complex technical and legal documentation. The goal of this hackathon is to develop a generative AI solution that can streamline and enhance the IP analysis process for legal teams. The solution should leverage state-of-the-art language models and natural language processing techniques to accurately extract relevant information from IP documents, summarize key findings, and generate actionable insights.



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Code: PS3

Track Code: AIML

Title: Identification Of Illegal Hoardings in the City.

Description: Identification of Illegal Hoardings in City of Bengaluru: To employ artificial intelligence and computer vision to detect and report unauthorized hoardings and billboards in Bengaluru, ensuring compliance with city regulations and improving urban aesthetics. This solution will aid in maintaining a clean and organized cityscape, free from visual clutter and potential safety hazards posed by illegally erected advertisements. Additionally, it will streamline the process of monitoring and enforcing hoarding regulations, enabling efficient resource allocation and revenue collection from legitimate advertising sources.



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Code: PS4

Track Code: AIML

Title: **Accurate Medical Concept Extraction from Clinical Notes**

Description: Develop a custom LLM capable of accurately extracting and interpreting medical concepts, such as diagnoses, symptoms, and treatments, from unstructured clinical notes. The LLM should be fine-tuned on a diverse corpus of electronic health records (EHRs) and medical literature, and should be able to handle domain-specific terminology, abbreviations, and contextual nuances. Furthermore, you are provided with multiple prompting challenges on the hack day which must ensure the LLM must not reveal SPIIs and other sensitive data in its response. Information on datasets and compute resources will be provided soon.



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Code: PS5

Track Code: AIML

Title: Develop an open-source AI-based mobile app data scraper

Description: Many companies now offer services and products exclusively through mobile apps without traditional websites, presenting challenges for data collection and analysis. This hackathon aims to develop an open-source, AI-based mobile app data scraper that can extract relevant data from apps with user consent and privacy preservation. The scraper should navigate app interfaces using computer vision and AI, intelligently identify and extract data through NLP and information extraction techniques, structure extracted data, handle cross-platform compatibility, ensure scalability and efficiency, and incorporate secure user consent and authorization mechanisms.

Bonus task: Target a particular app and build a Tableau-like dashboard.



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Tracks

2 Cyber Intelligence



Cyber Intelligence involves gathering and analyzing information related to digital threats to understand and mitigate potential risks. It encompasses various techniques for collecting data from different sources, including the dark web, social media, and network traffic. Analysts use this information to detect potential threats, monitor emerging trends, and anticipate cyberattacks. Cyber-intelligence helps organizations proactively defend against security breaches.

Problem Statements





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Code: PS1

Track Code: CYIN

Title: Securing Software Supply Chains and Detecting Malicious Code.

Description: Develop a comprehensive solution to identify and eliminate malicious code, including backdoors, viruses, trojans, spyware, wipers, and timebombs, from the software supply chain. This solution should address vulnerabilities that allow attackers to insert such code and compromise the integrity of software applications.



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Code: PS2

Track Code: CYIN

Title: Securing Web3 Transactions and Smart Contracts

Description: The widespread adoption of Web3 technologies introduces novel security challenges. Malicious actors target blockchain networks with fraudulent transactions and exploit vulnerabilities in smart contracts. This hackathon seeks innovative solutions to address the following challenges and bolster Web3 security:

- Real-time Blockchain Transaction Threat Detection (Mempool Analysis)
- Smart Contract Vulnerability Detection (AST-based Analysis)



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Code: PS3

Track Code: CYIN

**Title: Continuous Attack Surface
Monitoring and Vulnerability Tracking**

Description: Develop a solution to continuously monitor and track an organization's digital attack surface, including websites, network ranges, and other assets. The system should leverage open-source tools to scan for vulnerabilities across these assets, store identified vulnerabilities in a centralized database, and provide real-time updates when new vulnerabilities or asset changes are detected.



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Code: PS4

Track Code: CYIN

Title: Dark Web Reconnaissance and Data Breach Monitoring

Description: Develop a solution to perform reconnaissance on the dark web and other data sources, such as hacked databases and logs, to gather intelligence about potential data breaches and exposure of sensitive information. The system should allow users to search for specific identifiers (e.g., email addresses, names, or company names) and provide a comprehensive report on any exposed data, including passwords, personal details, or sensitive information found across these sources.



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Code: PS5

Track Code: CYIN

Title: Develop secure End-to-end Production AI system solutions

Description: Develop a comprehensive solution to secure the entire machine learning (ML) workflow, from data ingestion and ETL (Extract, Transform, Load) processes to model inference, ensuring the protection of sensitive data and model weights. The solution should address potential vulnerabilities and threats that could compromise the integrity, confidentiality, and availability of data and models throughout the ML lifecycle. The solution should provide tools or services to safeguard production AI engines that monitor various possible attack surfaces and prevent system jailbreaks



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Tracks

3

Web 3.0



Web 3.0 represents the next phase of the internet, focusing on decentralized protocols, blockchain, and enhanced user experiences. Participants will work on projects that leverage these technologies to reshape how information is accessed, shared, and managed on the web.

Problem Statements





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Code: PS1

Track Code: SWEB

Title: Efficient Zero-Knowledge Proofs for Scalable Smart Contract Adoption.

Description: The integration of efficient zero-knowledge proofs (ZKPs) into smart contract platforms is crucial for enhancing privacy and security. However, the computational complexity and gas costs associated with ZKP integration can significantly impact the overall transaction throughput and network performance, limiting the widespread adoption of this technology. Develop a solution that can seamlessly integrate efficient ZKP mechanisms into smart contract platforms, ensuring that the integration does not significantly impact the overall transaction throughput or gas costs. The goal is to create a ZKP framework that can be easily adopted by developers, offering a balance between privacy and security.



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Code: PS2

Track Code: SWEB

Title: Decentralized Sex Offender and Fraud Registry.

Description: In many jurisdictions, the public often lacks easy access to comprehensive and up-to-date information about registered sex offenders and individuals convicted of fraud-related crimes. This lack of transparency can put communities at risk and undermine efforts to protect vulnerable populations. Possible solution: Using blockchain technology, design a decentralized registry system that securely stores and verifies the identities and relevant details of registered sex offenders and convicted fraudsters. This platform should empower citizens with the ability to easily access and validate this information, while ensuring the privacy and due process rights of the individuals listed.



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Code: PS3

Track Code: SWEB

Title: **Decentralized Platform for Transparent Carbon Offsetting and Global Impact**

Description: The current carbon credit market lacks transparency, accessibility, and data cohesion. This hinders effective climate action and discourages broader participation. We need a system that incentivizes sustainable practices, fosters trust through transparent tracking, and empowers individuals and organizations to contribute to a global carbon market.



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Code: PS4

Track Code: SWEB

Title: Reimagining Knowledge: A Decentralized, Community-Driven Information Platform.

Description: Wikipedia, a cornerstone of online information access, faces challenges in maintaining neutrality and combating bias. Centralized control and reliance on editor reputation can hinder diverse representation and lead to information manipulation, as highlighted in the Lex Fridman and Balaji podcast discussion. The limitations of centralized information platforms like Wikipedia necessitate a next-generation solution built on Web 3.0 principles. This new platform should address these issues by employing: Decentralized Governance, shifting editorial control from a single entity to a distributed network of users. Consensus-Driven Curation would be fostered through a robust mechanism (to be determined) for collaboratively validating information accuracy and resolving disputes. To Incentivize Diverse Participation, the platform would reward users for contributing credible information and actively engaging in the governance process.



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Code: PS5

Track Code: SWEB

Title: Democratizing Web3 Access- A Phone-Centric Wallet with Seamless User Experience.

Description: Current crypto wallets often require complex seed phrases or private keys, creating a barrier to entry for the average user. Additionally, traditional KYC (Know Your Customer) processes can be cumbersome and deter new entrants to the Web3 space. Integrating user experience (UX) elements commonly seen in successful mobile payment apps (like UPI) is also lacking in many crypto wallets, hindering mainstream adoption.



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Tracks

4

Game and AR VR



The fusion of game development with AR and VR is revolutionizing the way we play. AR overlays digital elements onto your real world, letting you fight aliens in your living room. VR immerses you completely, allowing you to explore fantastical landscapes or battle dragons. This creates a deeper sense of immersion, engaging gameplay, and innovative mechanics, blurring the lines between reality and the virtual world.

Problem Statements





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Code: PS1

Track Code: ARVR

Title: Leveraging Open-Source Games for Social Impact

Description: This statement explores utilizing open-source games as tools to address social issues and drive positive change by taking in the inspiration from Prime Minister Narendra Modi's recent remarks on open-source games to foster Indic theme, and inspire action in Indian community to contribute more towards this. By combining engaging gameplay with collaborative open-source development, developers and activists can create immersive experiences that educate and motivate players to become agents of change. These games can cultivate a sense of community and collective action, enabling players to connect and collaborate on real-world challenges.

Bonus Task: Can you create a short, open-source game prototype focused on a specific Indian social issue? This prototype should leverage readily available tools and incorporate engaging mechanics to measure its impact.



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Code: PS2

Track Code: ARVR

Title: Data Protection and Privacy in Augmented Reality

Description: This problem statement identifies the need to ensure data security and user privacy in virtual reality (VR) environments. VR experiences often collect and use personal data, raising concerns about potential misuse. • Possible Solution: Develop privacy-preserving protocols and regulations for VR applications. This could involve giving users more control over their data, anonymizing data collection, and implementing strong security measures to protect user information.



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Code: PS3

Track Code: ARVR

Title: Gamified Resource Management for Sustainable Households

Description: This proposal outlines a gamified system designed to promote responsible consumption of essential resources within a domestic setting. The system leverages gamification principles to motivate users towards sustainable practices in water, electricity, and gas usage.



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Code: PS4

Track Code: ARVR

Title: VR Training for Emergency Response and public awareness: Simulating Disasters for Realistic Preparedness.

Description: This statement proposes using virtual reality (VR) technology to create training simulations for emergency responders. These simulations would realistically replicate disaster scenarios, allowing responders to practice their skills and improve preparedness.



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Code: PS5

Track Code: ARVR

Title: Gamified Digitization and Archival Workflows for Cultural Heritage Preservation.

Description: Enhancing engagement in digitization and archival processes is crucial for preserving cultural heritage and making historical records accessible. Traditional methods often struggle to maintain the motivation and meticulous attention required for these tasks.



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Prize Pool



Cash Prize worth 75k

Certificates, goodies and many more

Chance for product incubation

Why participate in Aventus ?

1. Skill enhancement, networking, innovation.
2. Experience, recognition, career opportunities.
3. Fun, creativity, community impact.
4. Problem-solving, collaboration, learning, exposure.



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Terms and Conditions

- Participants must be at least 18 years of age.
- Participants cannot be part of multiple teams during the hackathon.
- Participants must remain inside the designated areas within the college premises at all times throughout the duration of the hackathon.
- Participants must wear the provided ID Cards within the college premises at all times throughout the duration of the hackathon.
- Participants must conduct themselves in a respectful and professional manner throughout the hackathon.
- Participants must not engage in any form of harassment, discrimination, or offensive behaviour.
- Participants must comply with the instructions and decisions of the hackathon organisers and judges.
- Participants retain ownership of their pre-existing intellectual property.
- Participants must submit their projects within the specified deadline and in the required format.
- Participants must ensure that their submissions do not infringe upon any intellectual property rights of third parties.
- The judging criteria, process, and decisions will be determined by the hackathon organisers and are final.
- Participants will be notified of any changes or cancellations through the contact information provided during registration.
- The hackathon organisers offer prizes or rewards to participants based on specific criteria or categories.
- The details, eligibility, and distribution of prizes are determined by the judges and communicated to participants.
- Participants understand that any taxes, fees, or expenses associated with the prizes are their sole responsibility.
- Participants are responsible for ensuring they have access to the necessary technology, software, and equipment to participate effectively in the hackathon.
- Participants must not engage in any activities that may harm the hackathon infrastructure, compromise security, or disrupt the experience of other participants.
- Participants are responsible for their own health and safety during the hackathon. Basic first aid and medication will be provided during the hackathon.



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Terms and Conditions

- Participants agree that the hackathon organisers may collect, store, and process their personal information for the purpose of organising and administering the hackathon.
- Participants agree to allow the hackathon organisers to take photographs, record videos, or capture any other media during the hackathon.
- Participants grant the hackathon organisers the right to use their names, likenesses, project descriptions, and media for promotional purposes.
- Participants may use external resources, libraries, and open-source software unless explicitly prohibited by the hackathon rules.
- Participants may be disqualified from the hackathon if they violate any of the terms and conditions, cheat, engage in fraudulent activities, or act against the spirit of fair competition.
- Participants are responsible for regularly checking their emails or other communication channels for updates and important announcements.
- Participants may receive feedback and suggestions from the hackathon organisers, judges, or mentors to help improve their projects.
- Participants may be required to submit their code to a designated code repository specified by the hackathon organisers. The code repository may be used for verification, evaluation, and sharing purposes.
- In the event of any damages caused to the property during the hackathon, the responsible individual or team shall be held liable for compensation. The compensation amount will be determined based on the extent of the damage and will be subject to the discretion of the event organisers.
- In the event of property loss or damage during the hackathon, the organising committee will not be held responsible. Participants are strongly advised to take necessary precautions to safeguard their belongings.
- The organisers of the hackathon are not responsible for any drop in network speeds experienced during the event. While the Organizers will make reasonable efforts to provide a stable and reliable network connection, they cannot guarantee uninterrupted or flawless connectivity.
- Participants are required to develop projects that align with the chosen track they have selected. The projects presented by participants must be relevant to and fall within the scope of their selected track. If none of the projects are deemed related or deviates significantly from any chosen track, the track may be disqualified from prize consideration.



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