

INTERNATIONAL
DATA VORTEX
SKYINTELLECT
HACKATHON - 2025



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**PROBLEM
STATEMENTS**
FOR HACKATHON



CYBER DOMAIN

Code	Statement	Objective
CSPS01	Detecting and Preventing Ransomware Attacks	Develop a comprehensive software solution aimed at detecting and preventing ransomware attacks. This solution should incorporate advanced threat detection mechanisms and proactive measures to safeguard systems against ransomware threats.
CSPS02	OSINT for Target Information Gathering	Create a software tool that effectively gathers information about a target using Open Source Intelligence (OSINT) techniques. This tool should be capable of aggregating data from various public sources to provide a detailed profile of the target.
CSPS03	Forensic Triage on Computers and Mobile Devices	Design a forensic triage software capable of analyzing computers and mobile devices to identify malware, cryptocurrency transactions, and dark web activities. The tool should streamline the process of discovering and documenting digital evidence related to malicious activities.
CSPS04	Bulk IP Analysis with VoIP Calls, Tor, VPN and Proxy Detection	Develop a robust bulk IP analysis solution that includes the capability to detect VoIP calls and identify Tor network usage. This tool should facilitate the efficient analysis of large sets of IP addresses, providing insights into potential security threats and anonymized network traffic.

CYBER DOMAIN

Code	Statement	Objective
CSPS05	Fake social media accounts and their detection	The aim is to create an AI/ML-based system that analyzes account metadata and behavior to detect fake social media profiles. It should scan activity logs, follower patterns, and posting frequency to flag suspicious accounts. The tool should also enable users to report accounts and forward verified reports to a central agency. The solution must include an interface for monitoring flagged profiles. API integrations with social media platforms like Twitter and Instagram are needed for real-time data fetching and reporting. Use supervised and unsupervised learning techniques to improve detection accuracy. The system should maintain user privacy while enforcing content integrity.
CSPS06	Cybersecurity Log Analysis and Threat Detection Platform	A cybersecurity log analysis platform is needed to ingest, normalize, and analyze logs from diverse systems in real time. The platform should support user roles like SOC analysts, incident responders, and security managers. It must enable threat detection through rules, anomaly detection using machine learning, and customizable dashboards for real-time monitoring. Features like alert correlation, incident prioritization, and audit trails are essential. The system should be web-based, scalable, and compliant with cybersecurity standards (e.g., NIST, ISO 27001). Integration with existing SIEM, EDR, and threat intelligence feeds is also necessary for comprehensive protection.

DRONE TECHNOLOGY

Code	Statement	Objective
DTPS01	Autonomous Surveillance and Response Drone Network for Disaster Relief	Design an autonomous drone system that can coordinate in swarms to map disaster zones, detect survivors, and deliver supplies.
DTPS02	Drone-Based Agricultural Monitoring	Develop a drone system that uses computer vision and sensors to monitor crop health, soil moisture, and detect pest infestations.
DTPS03	Defense Drones	Deploy drones that have intelligent attack systems or bombardment type kamikaze drones
DTPS04	ANAV	Design an Autonomous Drone System That Can Navigate Without GPS or External Aids(GPS denied scenarios)
DTPS05	Underwater or Amphibious Drone Challenge	Design a drone capable of switching between aerial and underwater modes for aquatic inspections or research.
DTPS06	AeroCell: Drone-Based Emergency Communication Network for Disaster Zones.	Deploy drones with mini modems (LTE repeaters) that hover and provide emergency communication networks to a disaster zone for hours or days.
DTPS07	IoT-Powered Smart Energy Management	Deploy IoT sensors for collecting live energy usage and occupancy data. Develop analytics dashboards and smart recommendations using ML. Automate appliance control based on patterns and thresholds. Provide users with suggestions to reduce consumption. Track metrics like electricity savings and reduced peak usage.
DTPS08	Open Innovation	Have Ideas apart from the problem statements? Showcase your unique Idea

DATA SCIENCE

Code	Statement	Objective
DSPS01	Software for Speech Language Therapy Clinical Services	A software platform is needed to digitize the entire clinical cycle of speech-language therapy. It should support user roles such as therapists and supervisors and allow for therapy plan creation, daily documentation, and session-wise progress tracking. Supervisors should be able to review and rate therapy sessions easily. The platform must allow for remote monitoring, real-time updates, and centralized records. This ensures better continuity of care and accountability in clinical workflows. The system should be web-based, intuitive, and compliant with healthcare data standards. Alerts and dashboards will help keep track of pending reviews and therapy milestones.
DSPS02	Downscaling of Satellite based air quality map using AI/ML	The goal is to apply AI/ML techniques to transform low-resolution satellite NO₂ maps into detailed, high-resolution air quality maps. These fine-scale maps will help identify pollution hotspots and track pollution flow across neighborhoods. Models must also be able to compensate for missing data due to cloud cover using pattern recognition and intelligent interpolation. Validation using ground-truth air quality data is essential for real-world applicability. The approach should integrate spatial analysis and machine learning. Tools like Python, scikit-learn, or deep learning libraries can be used for modeling. This project supports environmental planning and health advisories.

DATA SCIENCE

Code	Statement	Objective
DSPS03	Implementation of the Alumni Association platform for the University/Institute.	A digital platform is needed to help alumni connect, share updates, contribute, and participate in events. The platform should allow alumni to create and update profiles, post job opportunities, register for reunions or webinars, and share success stories. Features for accepting donations and collecting feedback will also be useful. The platform must include a robust backend for admin moderation and event coordination. Integration with existing college systems should be possible. Technologies like React or Flutter for front-end and Firebase or Node.js for backend are ideal. Both web and mobile versions should be available for ease of access.
DSPS04	Machine Learning Model for Healthcare Risk Prediction	This project involves developing a machine learning model that analyzes patient health records to predict the likelihood of chronic conditions like diabetes or heart disease. It should use data such as vitals, previous diagnoses, age, and lifestyle habits. Healthcare providers will use the model to identify high-risk patients and schedule preventive measures. Classification techniques like logistic regression, decision trees, or ensemble methods may be used. The platform should provide risk scores along with recommendations for early intervention. Data preprocessing, feature engineering, and model validation are crucial steps. The solution will aid doctors in making faster, evidence-based decisions.

DATA SCIENCE

Code	Statement	Objective
DSPS05	Deep Learning for Abnormality Detection in Medical Imaging	The goal is to develop a deep learning system that can detect and classify abnormalities in medical images with high accuracy. Using large datasets of labeled X-ray and MRI images, a convolutional neural network (CNN) model can be trained to recognize common anomalies such as fractures, tumors, or organ damage. The system should highlight areas of concern for radiologists to verify, rather than replace them. This tool will serve as a diagnostic aid and reduce oversight in busy hospital settings. Image preprocessing, augmentation, and tuning of hyperparameters are critical to improve results. The model should be tested on diverse image types and conditions for robustness.
DSPS06	AI System for Emergency Traffic Clearance	This project aims to design an intelligent traffic control system that detects emergency vehicles and automatically clears the route by adjusting traffic lights. Live camera feeds and GPS data from emergency vehicles will be analyzed using AI-based object detection or vehicle recognition models. When an emergency vehicle is detected within a specific radius, the system should create a green corridor by managing multiple signals in sequence. The solution should be scalable to different city zones and traffic patterns. Real-time decision-making and minimal latency are key. Such systems can significantly reduce time-to-hospital during critical interventions.

DATA SCIENCE

Code	Statement	Objective
DSPS07	AI for Load Forecasting in Energy Distribution	This project aims to develop a machine learning-based energy load forecasting model using historical power usage, time-of-day, and external factors such as weather conditions. The model should handle short-term (daily/hourly) as well as long-term (weekly/monthly) forecasting. It should learn from past trends and adapt to seasonality and anomalies like holidays or heatwaves. Techniques like time-series regression, LSTM networks, or ensemble models can be applied. Accurate forecasts will help power companies optimize resource allocation, reduce costs, and maintain grid stability. The system should output interpretable forecasts for grid operators to make informed decisions.
DSPS08	Predictive Maintenance for Industrial Machinery	The objective is to develop a machine learning system that uses sensor data (temperature, vibration, pressure, usage hours) to detect signs of wear and predict failures. By analyzing patterns and anomalies, the system should recommend when specific components need maintenance or replacement. Historical logs of failures, maintenance events, and real-time telemetry will form the basis for model training. Models such as Random Forests, Gradient Boosting, or Neural Networks may be employed. The system must alert maintenance teams well in advance to plan resources. This reduces downtime, extends equipment life, and lowers costs.

DATA SCIENCE

Code	Statement	Objective
DSPS09	Real-time Equipment Health Monitoring System	The project focuses on deploying IoT sensors to collect live operational data from factory equipment. This includes temperature, vibration, power usage, and other machine-specific metrics. The system should detect deviations from normal patterns and trigger real-time alerts to maintenance teams. Historical data can also be used to build baseline models for anomaly detection. A dashboard will allow visualization of machine health, usage trends, and incident history. Alerts must be configurable, and the system should support multiple types of machinery. Integration with factory systems like SCADA or ERP would improve workflow automation and logging.

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