

Sl. No.	Sub-Domain	Area of the Project	Tentative Title	Dataset	Tools	Expected Outcome
AIML001	Agriculture AI	Leaf Disease Classification	Identify disease from plant leaf images	PlantVillage Dataset	CNN, TensorFlow	Mobile app for farmers
AIML002		Yield Loss Prediction due to Weather	Predict impact of weather anomalies on yield	Indian Meteorological Dataset	Regression, Keras	Crop loss estimator
AIML003	AgriTech	Crop Disease Detection	Classify plant diseases from leaf images	PlantVillage Dataset	CNN, OpenCV	Plant disease classifier
AIML004		Bias Detection in ML Models	Identify algorithmic bias in ML predictions	COMPAS Dataset	SHAP, LIME	Fairness report in ML models
AIML005	AI Ethics	Explainable AI Dashboard	Visualize decisions made by ML models	Any Tabular Dataset	SHAP, Dash	XAI web interface
AIML006		Text-to-Braille Translator	Convert text to Braille for visually impaired users	Unicode/Braille Mapping	Python, GUI Toolkit	Assistive translation tool
AIML007	AI for Events	Automated Event Feedback Analyzer	Analyze event feedback (text + rating)	Event Feedback Form Data	NLP, Sentiment Analysis	Event quality dashboard
AIML008	AI for Finance	Real Estate Price Prediction	Predict property prices	Housing Dataset (Kaggle)	Linear Regression, Seaborn	Price estimation model
AIML009	AI for Law	Legal Document Classifier	Categorize legal documents (contract, case law, etc.)	Indian Legal Dataset	BERT, Python	Auto-tagging legal files
AIML010	AI for Security	Intrusion Detection System	Detect unusual access patterns in networks	NSL-KDD Dataset	SVM, Keras	Real-time threat alerts
AIML011	AI in Agriculture	Fertilizer Recommendation System	Suggest fertilizer based on soil and crop data	India Agri Dataset	Decision Tree, Python	Smart agri-advisory tool
AIML012	AI in HR	Attrition Prediction	Predict employees likely to leave	HR Analytics Dataset	Decision Tree, Python	HR retention analysis
AIML013	AI in Insurance	Insurance Claim Prediction	Predict insurance claims likelihood	Health Insurance Dataset	XGBoost, Scikit-learn	Insurance risk analyzer
AIML014	AI in Smart Cities	Garbage Bin Fill Level Predictor	Predict when bins will be full using IoT data	Simulated IoT Data	Regression, Python	Garbage collection scheduler
AIML015	AI in Tourism	Travel Itinerary Recommender	Generate travel plans based on user interests	TripAdvisor / Yelp	NLP, Collaborative Filtering	AI-generated itinerary
AIML016	Assistive Tech	Object Detection with Audio Feedback	Identify and vocalize nearby objects for the visually	COCO Dataset	YOLO, Text-to-Speech	Voice-based visual assistant
AIML017		Sign Language to Text Converter	Convert sign language to readable text	ASL Alphabet Dataset	CNN, MediaPipe	Communication tool for hearing-impaired
AIML018	Autonomous AI	Self-driving Car Simulation	Train a model to drive in a simulation	Udacity Self-driving Car Dataset	CNN, Carla, Python	Lane detection and steering controller
AIML019	Autonomous Systems	Object Following Robot	Build a robot that follows a target object	Custom Video Feed	OpenCV, Raspberry Pi	Object tracking robot
AIML020	Autonomous Vehicles	Lane Detection System	Detect lane lines from road images	TuSimple Dataset	OpenCV, CNN	Lane-keeping support for vehicles
AIML021	Banking AI	Loan Approval Prediction	Predict loan approval status	Loan Prediction Dataset (Kaggle)	Decision Tree, Logistic Regression	Auto-loan approval model
AIML022	Biometrics Security	Face Recognition Login	Authenticate users using facial biometrics	LFW Dataset	FaceNet, Dlib	Face-based authentication system
AIML023	Blockchain + AI	Secure Health Records Access	Use blockchain with ML to control health data access	Simulated EHR	Ethereum, Python	Decentralized access + AI predictions
AIML024	Chatbot AI	Legal Advice Chatbot	Respond to common legal queries	Indian Penal Code Texts	Rasa, Python	AI-based legal assistant
AIML025	Climate AI	Air Quality Index Prediction	Predict AQI based on pollutants and weather	UCI Air Quality Dataset	XGBoost, Python	Pollution prediction dashboard
AIML026	Cloud Security	VM Intrusion Classification	Classify attacks on virtual machines	UNSW-NB15 Dataset	Random Forest, Python	Cloud attack detection engine
AIML027	Computer Vision	Eye Blink Detection	Detect eye blinks in webcam footage	Custom Dataset	Dlib, OpenCV	Fatigue monitoring system
AIML028		Fire and Smoke Detection	Detect fire/smoke in video feeds	Custom CCTV Dataset	CNN, OpenCV	Fire safety alert system
AIML029		Pedestrian Detection	Detect pedestrians in real-time video feeds	Caltech Pedestrian Dataset	OpenCV, YOLO, TensorFlow	Pedestrian detection alert system
AIML030	Customer Analytics	Traffic Sign Recognition	Classify traffic signs in images	GTSRB	CNN, OpenCV, TensorFlow	Road sign recognition system
AIML031		Customer Churn Prediction	Predict which customers will leave a service	Telco Churn Dataset	Random Forest, Python	Churn prediction dashboard
AIML032		Phishing URL Detection	Classify URLs as phishing or legitimate	Phishing Website Dataset	Random Forest, NLP	Safe browsing browser extension
AIML033	Edge AI	Face Recognition on Edge Device	Perform face recognition on a Raspberry Pi	LFW Dataset	Dlib, OpenCV	Local face authentication
AIML034	Edge Computing	Real-Time Fire Detection	Detect fire in real-time on edge devices	Flame Dataset	OpenCV, Raspberry Pi, CNN	Fire alert system with local inference
AIML035	EdTech	Personalized Learning Path Generator	Recommend courses/modules based on learning	MOOC Dataset	Collaborative Filtering, Python	Custom learning plans

AIML036	Education AI	Student Performance Predictor	Predict academic performance from internal marks	Student Dataset (UCI)	Decision Tree, Python	Marks forecasting tool
AIML037	Education Analytics	Online Exam Proctoring System	Detect malpractice using webcam and mic	Custom Surveillance Data	OpenCV, Audio Analysis	AI-based exam invigilation
AIML038	EduTech	AI Essay Grader	Automatically grade essays	ASAP Dataset	BERT, Scikit-learn	Automated grading system
AIML039	E-Governance	Grievance Classification System	Auto-route complaints to departments	Indian OpenGov Dataset	NLP, Naive Bayes	Smart grievance routing system
AIML040	Emotion AI	Real-time Emotion Recognition via Webcam	Detect and classify emotions live via webcam	FER+, CK+ Datasets	CNN, OpenCV	Emotion-aware applications
AIML041	Emotion Recognition	Facial Emotion Detection	Detect emotions like happy, sad, angry from faces	FER-2013	CNN, Keras	Emotion-based user interface
AIML042	Energy AI	Electricity Theft Detection	Identify anomalies in consumption data	Smart Meter Data	Isolation Forest, LSTM	Theft alert system
AIML043	Finance AI	Credit Score Predictor	Predict user credit score level based on history	LendingClub / Kaggle	XGBoost, Python	Credit score prediction app
AIML044		Bank Customer Segmentation	Cluster customers for targeted marketing	Banking Data	KMeans, Seaborn	Customer profiling dashboard
AIML045	Financial Forecasting	Stock Market Trend Prediction	Predict stock prices using past data	Yahoo Finance	LSTM (Keras), Matplotlib	Stock trend visualizer
AIML046	Financial NLP	Earnings Call Sentiment Analysis	Analyze tone of earnings calls to predict stock	Earnings Transcripts Dataset	BERT, Sentiment Analysis	Market sentiment insights
AIML047	Fraud Detection	Credit Card Fraud Detection	Detect fraud in transactions	Credit Card Dataset (Kaggle)	Isolation Forest, XGBoost	Real-time fraud alerts
AIML048	Game AI	Tic Tac Toe AI with Minimax	Build an unbeatable Tic Tac Toe AI	N/A	Minimax, Python	AI game engine
AIML049	Green AI	Smart Lighting with Occupancy Sensing	Turn lights off/on based on motion detection	Custom Sensor Logs	Raspberry Pi, Python	Energy-saving home lighting
AIML050	Green Computing	Energy Efficient Scheduling	Optimize CPU tasks to reduce power usage	Synthetic Logs	SimPy, Python	Power-aware task scheduler
AIML051	Healthcare + IoT	Wearable-based Activity Recognition	Classify activities like walking, sitting, etc.	WISDM Dataset	Random Forest, Python	Health monitoring via wearables
AIML052	Healthcare AI	Disease Prediction using ML	Predict diseases like diabetes, heart disease, etc.	UCI Machine Learning Repository	Python, Scikit-learn	Risk prediction
AIML053		Stroke Prediction	Predict risk of stroke using patient attributes	Stroke Dataset (Kaggle)	Logistic Regression, Python	Risk prediction system
AIML054	Healthcare Analytics	Diabetic Retinopathy Classification	Classify retina images into disease severity levels	APTOS 2019 Dataset	CNN, TensorFlow	Eye disease severity detection
AIML055	Healthcare Robotics	Smart Pill Reminder	Remind users to take medicine using AI timer + speech	Simulated Logs	Python, Text-to-Speech	Voice-based pill assistant
AIML056	Healthcare Vision	Skin Cancer Detection	Classify skin lesions from images	ISIC Skin Cancer Dataset	CNN, Keras	Mobile screening app
AIML057	HR AI	Resume Skill Extractor	Extract and tag skills from resumes automatically	Custom Resume Dataset	Spacy, NER	Resume parser
AIML058	IoT & Healthcare	Fall Detection for Elderly	Detect falls using wearable accelerometer data	MobiFall Dataset	Random Forest, Python	Caregiver alert system
AIML059	Medical Imaging	Pneumonia Detection from X-rays	Identify pneumonia from chest X-rays	Chest X-ray Dataset (Kaggle)	CNN, Keras	Diagnostic assistant
AIML060	Mental Health AI	Depression Level Predictor	Assess depression from social media text	Reddit Depression Dataset	NLP, SVM	Mental health analysis tool
AIML061		Fake News Detection	Classify news as fake or real using text data	Kaggle Fake News Dataset	TF-IDF, Logistic Regression	Fake news classifier
AIML062		Resume Ranking System	Rank job applicants based on resume content	Synthetic Resume Dataset	TF-IDF, Cosine Similarity	Automated applicant filter
AIML063	NLP	Text Summarizer using Transformers	Summarize long articles using NLP models	CNN/DailyMail / WikiHow	BERT, HuggingFace Transformers	Abstract summarizer
AIML064		Twitter Sentiment Analyzer	Analyze public sentiment on Twitter	Sentiment140 / Twitter API	NLTK, TextBlob	Real-time sentiment dashboard
AIML065		College Helpdesk Bot	Answer campus-related FAQs	Custom Dataset	Dialogflow, Python	Student support chatbot
AIML066	OCR	Handwritten Digit Recognition	Recognize digits from handwritten images	MNIST	CNN, TensorFlow	Digit recognition module
AIML067	Personal Productivity	Smart To-do Prioritizer	Prioritize tasks based on deadlines and effort	User-generated Task Logs	Rule-based Engine + ML Ranking	AI planner assistant
AIML068	Public Safety	Crowd Density Estimation	Estimate the number of people in a given area	UCF-QNRF Dataset	CNN, Density Maps	Crowd count dashboard
AIML069		Firearm Detection in Public Places	Detect firearms in public CCTV footage	Open Images / Custom	YOLOv5, OpenCV	Public alert system
AIML070	Quantum AI	Quantum Circuit Visualization Tool	Visualize and simulate quantum circuits	Simulated Data	Qiskit, Python	Educational visualizer
AIML071	Quantum Computing	Quantum Gate Simulator	Simulate basic quantum gates using Python	Simulated Dataset	Qiskit, Python	Educational quantum simulator

AIML072	Recommender Systems	Movie Recommendation System	Suggest movies using collaborative filtering	MovieLens	Pandas, Surprise	Personalized movie suggestions
AIML073		Product Recommendation System	Recommend products to users based on purchase history	E-commerce dataset (Kaggle)	Collaborative Filtering, Python	Personalized shopping assistant
AIML074	Retail AI	Sales Forecasting	Predict future sales of products	Walmart Sales Dataset	LSTM, Pandas	Demand forecasting dashboard
AIML075		Visual Product Search	Search products using image queries	DeepFashion / Custom	CNN, Siamese Network	Image-based product recommender
AIML076	Robotics AI	Autonomous Delivery Bot	Simulate delivery robot path planning	Gazebo Sim Env.	ROS, Python	Simulated delivery robot
AIML077	Safety & Compliance	Face Mask Detection	Detect mask presence on faces	RMFD Dataset	YOLOv5, OpenCV	Safety monitoring system
AIML078	Sentiment Analysis	Product Review Classifier	Classify product reviews as positive or negative	Amazon Reviews Dataset	NLTK, Python	Sentiment tagger for reviews
AIML079	Smart Healthcare	Heart Disease Prediction	Predict the presence of heart disease	Cleveland Heart Dataset	Logistic Regression, Python	Web-based diagnostic tool
AIML080		Parkinson's Disease Detection	Predict Parkinson's disease using voice data	UCI Parkinson Dataset	Logistic Regression, Python	Voice-based screening tool
AIML081	Smart Homes	Gesture Controlled Home Automation	Control devices with hand gestures	Custom Sensor Data	MediaPipe, Arduino	Gesture-based control interface
AIML082	Smart Infrastructure	Intelligent Elevator Scheduler	Optimize elevator stops for energy and time efficiency	Simulated Logs	Reinforcement Learning, Python	Smart elevator system
AIML083	Smart Vehicles	Driver Drowsiness Detection	Detect and alert driver fatigue	Yawning Dataset	Eye Aspect Ratio, OpenCV	Fatigue alert system
AIML084	Social Media AI	Instagram Influencer Analysis	Rank influencers by engagement, audience quality	Instagram Public API	Python, NetworkX	Influencer evaluation system
AIML085	Speech AI	Voice Gender Recognition	Identify gender from speech samples	Mozilla CommonVoice	MFCC, SVM	Voice-based gender detection
AIML086	Speech Recognition	Speech-to-Text Converter	Convert voice to text	Mozilla CommonVoice	DeepSpeech, Python	Real-time transcription
AIML087	Surveillance	Weapon Detection in CCTV Feeds	Detect presence of weapons in surveillance videos	Custom/Simulated Dataset	YOLO, OpenCV, Python	Public safety alert system
AIML088	Surveillance AI	Helmet Detection on Riders	Identify motorbike riders without helmets	Custom CCTV Dataset	YOLOv5, Python	Traffic safety monitoring system
AIML089	Text Analytics	Email Spam Classifier	Classify emails as spam or not	Enron Spam Dataset	Naive Bayes, Sklearn	Email filtering system
AIML090		Topic Modeling on News Articles	Extract hidden topics from a corpus	News Dataset (BBC, Kaggle)	LDA, Gensim	Topic clusters and summaries
AIML091	Time Series	Weather Forecasting	Predict temperature or rainfall patterns	NOAA / Kaggle Weather Data	ARIMA, LSTM	Short-term weather predictor
AIML092	Transport AI	Bus Arrival Time Prediction	Predict city bus ETA using GPS logs	Transit Feed / GTFS	Time-Series Forecasting, LSTM	ETA tracking tool for commuters
AIML093	Transportation AI	License Plate Recognition	Extract license plate numbers from images	OpenALPR / Custom	OCR, OpenCV	Automated plate recognition
AIML094		Vehicle Type Classification	Classify vehicle types from road footage	Stanford AI Cars Dataset	CNN, OpenCV	Traffic categorization system
AIML095	Video Analytics	Social Distance Monitoring System	Detect people and monitor spacing in public areas	Custom video feeds	YOLOv5, DeepSORT	Distance violation alerts
AIML096	Vision + Mobility	Wheelchair Navigation Assistant	Detect obstacles for wheelchair users	Custom Video Dataset	YOLO, Raspberry Pi	Obstacle avoidance system
AIML097	Wearable AI	Fitness Activity Tracker	Track and analyze daily workout data	Fitbit / WISDM Dataset	KNN, TensorFlow Lite	Mobile fitness companion
AIML098		Sleep Quality Monitoring	Assess sleep quality using smart band data	Sleep-EDF Dataset	Time-Series Analysis, Python	Sleep stage classification
AIML099		Stress Level Estimator	Predict stress levels using wearable sensor data	SWELL Dataset	Random Forest, Python	Mental health alert assistant
AIML100	Wildlife Monitoring	Animal Detection using Drones	Track animals in aerial images for conservation	Custom Drone Dataset	YOLO, TensorFlow	Wildlife heatmap/alerts

Sl. No	Sub-Domain	Project Area	Tentative Title	Dataset	Tools Used	Expected Outcome
CSBC001	Access Control	Role-Based Access Control (RBAC) System	Build RBAC for enterprise data resources	Simulated Access Logs	Flask, SQLAlchemy	Secure role-based authorization
CSBC002	Application Security	Android App Static Code Analyzer	Scan app source code for insecure permissions	Android Source Code	Python, Static Analysis Tools	App security inspection tool
CSBC003		Android Malware Detection	Classify Android APKs as benign or malware	DREBIN Dataset	ML Classifiers, Java	Malware scanner for Android
CSBC004		Secure Code Review Helper Tool	Highlight bad coding practices in source code	Student Project Code	Regex, Static Analyzer	Review helper for code submissions
CSBC005	Authentication	Python Script Security Analyzer	Detect risks in Python-based scripts	Python Code Snippets	AST, Regex, Bandit	Code security scanner
CSBC006		MFA with Face + Fingerprint	Add biometric-based multi-factor login	Custom Biometric Dataset	OpenCV, Python	Secure login prototype
CSBC007		Behavioral Biometrics	Keystroke Dynamics Authentication	Custom Typing Dataset	SVM, Python	Biometric access model
CSBC008	Blockchain	Blockchain-based Voting System	Enable secure and transparent e-voting	Simulated Votes	Ethereum, Solidity	Decentralized election platform
CSBC009		Decentralized Cloud Storage	Store files securely using P2P blockchain	IPFS Network	Ethereum, IPFS, React	Blockchain-based storage
CSBC010		NFT Minting Platform	Create and manage non-fungible tokens	Custom Image Dataset	Ethereum, Solidity, IPFS	NFT creation interface
CSBC011		Secure Land Registry	Register properties securely using blockchain	Simulated Land Data	Solidity, Ethereum	Land record blockchain
CSBC012		Token-based Crowdfunding	Transparent donation system using tokens	ERC-20 Token on Ethereum	Solidity, MetaMask	Decentralized fundraising platform
CSBC013		Blockchain-based Certificate Issuer	Issue verifiable digital certificates	Custom Student Dataset	Ethereum, Solidity, QR	Tamper-proof certificate system
CSBC014		Vehicle Ownership Transfer on Blockchain	Record vehicle sale/transfer securely	Simulated RTO Data	Ethereum, Solidity, QR	Vehicle record DApp
CSBC015		Secure Voting for Academic Elections	Conduct online college elections securely	Simulated Voter Data	Ethereum, Ganache, MetaMask	Decentralized voting portal
CSBC016		Blockchain-based Academic Records	Store student results and transcripts on-chain	Simulated Result Data	Solidity, Ethereum, React	Decentralized academic records
CSBC017		E-voting with Biometric Authentication	Add biometric authentication to e-voting	Dummy Biometric Data	Ethereum, OpenCV, Solidity	Biometric voting portal
CSBC018	Blockchain + AI	Blockchain for Product Traceability	Track product supply chain securely	Simulated Supply Chain Data	Hyperledger Fabric, Node.js	Provenance tracking app
CSBC019		Blockchain Loyalty Points System	Reward users with crypto points in a decentralized way	Simulated Loyalty Data	Ethereum, ERC-20	Loyalty reward app
CSBC020		Fraud Detection on Blockchain Transactions	Detect fraud via transaction behavior	Etherscan / Simulated Data	ML Classifiers, Pandas	Fraud flagging module
CSBC021	Blockchain +	Biometric-Paired Crypto Wallet	Secure crypto wallets with fingerprint unlock	Dummy Biometric Logs	Python, OpenCV, Wallet SDKs	Biometric-controlled crypto storage
CSBC022	Blockchain + Finance	Blockchain-based Microfinance Platform	Provide decentralized microloans to borrowers	Simulated Microloan Dataset	Solidity, Web3, React	Transparent microloan app
CSBC023	Blockchain + Health	Vaccine Distribution using Blockchain	Secure, track, and validate vaccine supply	WHO / Simulated Dataset	Ethereum, React, MetaMask	Cold chain and fraud protection
CSBC024	Blockchain + IoT	IoT Device Authentication via Blockchain	Authenticate devices in IoT mesh using blockchain	Simulated IoT Mesh	Hyperledger Fabric, Node.js	Blockchain-based access control
CSBC025	Blockchain Identity	Decentralized Identity System	Assign verifiable digital identity using blockchain	Dummy KYC Dataset	uPort, Ethereum	DApp for identity verification
CSBC026		Blockchain-based Student ID System	Issue verifiable student IDs stored on chain	College ERP Data (Mock)	Hyperledger Indy, Node.js	Verifiable digital ID
CSBC027		Employee Digital Badge System	Issue verifiable identity credentials for employees	Simulated HR Dataset	Blockchain + QR, React	Digital ID + QR Verification
CSBC028	Blockchain Logistics	Asset Tracking on Blockchain	Secure tracking of valuable goods in transit	Simulated Logistics Data	Ethereum, QR, IPFS	Tamper-proof logistics platform
CSBC029	Blockchain Notary	Digital Document Notarization System	Certify documents via blockchain	PDF / Text Documents	Ethereum, IPFS, QR	Verifiable document hashes
CSBC030	Blockchain Security	Smart Contract Vulnerability Detector	Detect bugs in Ethereum smart contracts	OpenZeppelin / Custom Code	Static Analyzer, Regex	Secure contract auditing tool
CSBC031		Double Spending Attack Simulator	Simulate and defend double-spend scenarios	Testnet Coins	Solidity, Ganache	Smart contract with anti-fraud features
CSBC032	Blockchain Storage	Immutable Log System using Blockchain	Create unchangeable system logs for audit compliance	Log Simulation	Ethereum, IPFS	Transparent and auditable logging
CSBC033	Blockchain Voting	Blockchain Voting with Real-time Audit	Show voter count updates with immutable ledger	Simulated Voter List	Solidity, Web3.js	Transparent real-time vote log
CSBC034		Blockchain Voting for Academic Awards	Select winners in college contests using immutable	Simulated Nominee Data	Ethereum, Ganache	Transparent e-voting tool
CSBC035	Browser Security	Malicious Extension Detector	Detect browser extensions with risky behaviors	Chrome Extension Data	Static & Dynamic Analysis	Browser protection tool

CSBC036	Cloud Security	VM Escape Attack Simulation	Demonstrate hypervisor-based attack vectors	VirtualBox / QEMU	Python, VM Tools	Controlled demonstration of vulnerability
CSBC037		Secure API Gateway for Microservices	Control and monitor access to cloud APIs	Dummy APIs	API Gateway, JWT, OAuth2	API-level access control
CSBC038		Data Leak Detection for Shared Files	Detect unauthorized data leaks in cloud sharing	Simulated File Sharing Logs	Watermarking, NLP, Python	Leak detection & traceability
CSBC039	Crypto Finance	Crypto Price Volatility Predictor	Predict BTC/ETH price swings using history	CoinMarketCap API	LSTM, Pandas	Crypto trend forecaster
CSBC040		Image Encryption using AES	Encrypt and decrypt images securely	Any Image Dataset	OpenCV, AES	Secure image sharing tool
CSBC041	Cryptography	Visual Cryptography for Image Sharing	Share secret images via cryptographic splitting	Any Images	Python, Image Processing	Secret image reconstruction
CSBC042		Secure Chat App with End-to-End Encryption	Build a messaging app using AES/RSA	Real-time Chat	Flask, PyCrypto, WebSockets	Encrypted messaging system
CSBC043		QR Code Based Secure OTP System	Generate one-time passwords via encrypted QR codes	Simulated Auth Logs	Python, pyqrcode, AES	Secure login + QR delivery
CSBC044		Voice Encryption App	Encrypt audio messages using public-key crypto	Custom Audio Files	PyCrypto, AudioLibs	Secure voice messaging
CSBC045		Post-Quantum Cryptography Demo	Showcase lattice-based cryptographic algorithm	Custom Text Dataset	Python, NTRU, Dilithium	Secure messaging resistant to quantum
CSBC046		Image Steganography with Encryption	Hide and encrypt messages in images	Any Image Dataset	Python, LSB Steganography	Secure image messenger
CSBC047	Cyber Analytics	Web Traffic Behavior Classification	Identify legitimate vs bot traffic	Simulated Web Logs	K-means, LSTM	Bot detection system
CSBC048	Cyber Awareness	Security Awareness Gamification App	Educate users through gamified cybersecurity tasks	Self-created Questions	Android Studio, Firebase	Mobile security awareness app
CSBC049		Awareness Quiz Game on Cyber Hygiene	Teach cyber safety through quizzes	Custom Question Bank	Android / WebApp	Cyber awareness education tool
CSBC050	Cyber Law	Cybercrime Classification Tool	Classify cases under IPC and IT Act	Indian Legal Texts	BERT, NLP	Legal aid classification tool
CSBC051	Cyber Psychology	Online Scam Prediction Model	Predict scam likelihood based on conversation cues	Custom Scam Dataset	NLP, Transformers	Scam prevention chatbot
CSBC052	Cyber Risk	Personal Cyber Hygiene Evaluator	Rate personal security practices via survey	Custom Survey Dataset	Dash, Python, ML	Personal risk scoring tool
CSBC053	Cyber Risk Analytics	Risk Scoring Dashboard for SMEs	Score cyber-risk of small businesses	Simulated SME Data	Dash, Risk Matrix, ML	Cyber-risk report generator
CSBC054	Cyber Threat Hunting	Threat IOC (Indicator of Compromise) Parser	Parse and visualize indicators from threat reports	MISP Format / JSON Feeds	Python, Visualization	IOC dashboard for threat intel
CSBC055	Cybercrime	Dark Web Forum Crawler	Crawl darknet forums for threat intel	Onion Forums	Scrapy, NLTK	Cybercrime intelligence tool
CSBC056	Data Privacy	PII Detection in Text	Detect personal data in free text	Synthetic PII Dataset	Spacy, Named Entity Recognition	Privacy compliance checker
CSBC057		Differential Privacy in Health Datasets	Apply noise to data while preserving analysis	UCI Health Datasets	Python, Opacus, DP Libraries	Privacy-preserving health analytics
CSBC058	Digital Forensics	USB Device Activity Monitor	Track file transfers from USB ports	System Audit Logs	Python, Windows Registry	USB usage audit tool
CSBC059		File Timeline Reconstruction	Recover deleted/modified file history	Disk Images	Sleuth Kit, Autopsy, Python	File activity timeline viewer
CSBC060	DNS Security	DNS Tunneling Detection System	Detect covert communication via DNS	Simulated DNS Logs	Python, Anomaly Detection	DNS abuse prevention tool
CSBC061	Email Security	Email Header Analyzer	Trace origin of spoofed/malicious emails	Spam Email Dataset	Python, Regex	Email verification & forensics tool
CSBC062		Email Spoofing Detector	Validate email authenticity using SPF/DKIM	Custom Email Headers	Python, DNS Lookup	Spoof email checker
CSBC063		BEC (Business Email Compromise) Classifier	Detect fraud in financial request emails	Custom Labeled Emails	NLP, Transformers	Fraud email detection system
CSBC064		Email Content Risk Analyzer	Analyze text and attachments for sensitive data	Email Dataset	DLP, Regex, NLP	DLP (Data Loss Prevention) Tool
CSBC065	Ethical Hacking	Web Vulnerability Scanner	Detect OWASP Top 10 flaws in web apps	OWASP Vulnerable Web	SQLmap, Nmap, Python	Web security scanner
CSBC066	Forensics	Network Packet Trace Analyzer	Trace attacks via packet captures	PCAP Logs	Wireshark, Python	Forensic analysis dashboard
CSBC067		Mobile Device Forensics Toolkit	Extract SMS, call, app logs for forensic purposes	Custom Android Logs	ADB, Python	Mobile investigation kit
CSBC068	Insider Threats	Employee Activity Logger	Log abnormal internal behavior for insider threats	Simulated Workstation Logs	Python, Activity Logs	Anomaly detection system
CSBC069	IoT Forensics	Smart Home Forensics Tool	Log and audit IoT device activity	Simulated IoT Logs	Python, SQLite	Device-level forensic tracker
CSBC070	IoT Security	Anomaly Detection in IoT Devices	Detect compromised IoT behavior	BoT-IoT Dataset	XGBoost, Deep Learning	IoT threat detection dashboard
CSBC071		Secure Firmware Update System	Deliver firmware updates securely to IoT devices	Simulated IoT Devices	HTTPS, Cryptographic	OTA update platform

CSBC072		Drone Communication Security Framework	Secure drone-to-server communications	Simulated Drone Logs	TLS, Public-Key Infra	Encrypted control signals
CSBC073	Malware Analysis	PE File Analyzer for Windows	Analyze executable (.exe) files for threats	MalwareBazaar, Custom	PEframe, Python	Static malware inspection tool
CSBC074	Malware Detection	AI-based Ransomware Classifier	Detect ransomware families using behavioral signatures	EMBER, Custom Executables	LightGBM, Scikit-learn	Ransomware alert engine
CSBC075	Network Monitoring	Live Bandwidth Sniffer	Monitor per-device network usage	Live Network Logs	Python, Scapy	Bandwidth usage analyzer
CSBC076	Network Security	Intrusion Detection System (IDS)	Detect network-based attacks like DoS, probe, R2L	NSL-KDD Dataset	Python, Scikit-learn	Real-time alert-based IDS
CSBC077		Port Scanning Visualizer	Scan and visualize open ports in a network	Live Network Scan	Nmap, Dash, Python	Interactive port map viewer
CSBC078	Password Security	Password Strength Evaluator + Generator	Rate & generate strong passwords	Password Lists	Regex, Flask	Secure password toolkit
CSBC079		OWASP Vulnerability Scanner Dashboard	Scan web apps against OWASP Top 10 issues	DVWA / bWAPP	ZAP Proxy, Nmap, Python	OWASP risk assessment dashboard
CSBC080	Penetration Testing	Bluetooth Vulnerability Scanner	Scan for insecure Bluetooth devices nearby	Live BT Logs	Linux BT Tools, Python	Bluetooth risk assessor
CSBC081		XSS Payload Analyzer	Test input forms for stored/reflected XSS	Simulated Web Forms	Burp Suite, Python	Web input sanitization tester
CSBC082	Phishing Detection	Phishing URL Detection	Classify phishing websites using URL patterns	PhishTank Dataset	Random Forest, NLP	Browser extension for phishing detection
CSBC083	Privacy	AI-based Face Obfuscation Tool	Blur/detect faces in public surveillance for privacy	Surveillance Dataset	OpenCV, Face Detection	GDPR-compliant video footage
CSBC084		Federated Learning on Wearable Data	Train ML models without data centralization	Simulated Health Data	TFF, PySyft	Privacy-preserving AI on edge
CSBC085	Privacy-Preserving AI	Federated Learning on Medical Data	Train ML models without sharing patient data	Simulated Health Records	TensorFlow Federated	Privacy-preserving model
CSBC086	Ransomware Research	Ransomware Behavior Simulator	Simulate how ransomware behaves on a local file	Local FS (Simulated)	Python, Watchdog	Awareness & behavior analyzer
CSBC087	Secure DevOps	Secure CI/CD Pipeline	Automate vulnerability scans in DevOps process	GitHub Actions Data	SonarQube, OWASP ZAP,	Vulnerability-aware DevOps pipeline
CSBC088	Secure Storage	Encrypted Cloud File Storage	Encrypt files before upload to cloud	Any Document Dataset	Python, Cryptography, Firebase	Secure cloud vault
CSBC089	Smart Contracts	Smart Legal Agreements	Encode contract terms as code for automation	Sample Contracts	Ethereum, Solidity, Web3.js	Auto-enforced legal contracts
CSBC090	Social Engineering	Email Phishing Simulator	Simulate phishing campaigns to train employees	Simulated Email Logs	Flask, Python	Awareness training simulator
CSBC091	Social Media Security	Fake Profile Detection on Instagram	Detect bots or fake followers	Instagram API / Simulated	Graph Analysis, Python	Influencer quality checker
CSBC092	System Hardening	Windows System Audit Script	Audit weak configurations on Windows PCs	Registry and GPO Data	PowerShell, Python	System security audit report
CSBC093	System Security	Linux Rootkit Detector	Detect rootkits by comparing system call integrity	Linux Logs	Python, chkrootkit	System-level malware detector
CSBC094	Threat Detection	Insider Threat Detection using ML	Identify abnormal insider behavior in organizations	Simulated User Activity Logs	Random Forest, Python	Behavioral threat alert system
CSBC095		Automated CVE Threat Collector	Auto-crawl threat feeds and CVE databases	NVD, CVE Blogs	Scrapy, NLP	Threat alerting dashboard
CSBC096	Threat Intelligence	Twitter-based Threat Feed Collector	Track and classify security threats from Twitter	Twitter API	Tweepy, NLP	Real-time threat feed dashboard
CSBC097		Malware Tweet Classification	Classify tweets as threat intel, alert, or benign	Twitter Security Dataset	BERT, NLP	SOC alert enhancer
CSBC098	Threat Modeling	MITRE ATT&CK Based Simulation	Simulate known attack tactics for learning	MITRE Framework	Python, Simulators	Training toolkit for blue teams
CSBC099	Web Security	SQL Injection Detection	Identify SQLi attacks from HTTP logs	Custom Web Logs	Regex, Python, ML	Web attack prevention system
CSBC100	Wireless Security	Wi-Fi Sniffer and Analyzer	Capture and inspect Wi-Fi traffic	Live PCAP Logs	Wireshark, Scapy	Wireless packet analysis tool

Sl. No	Sub-Domain	Project Area	Tentative Title	Dataset	Tools Used
CN001	6G Networks	THz Band Propagation Analysis	Simulate 6G use cases using Terahertz spectrum	6G Channel Models	MATLAB, Custom
CN002	Ad Hoc Networks	Cross-Layer Design in MANET	Combine MAC + Routing layer for performance gains	NS2 Mobility Model	NS2, Custom Protocols
CN003	AI in Network Planning	AI-based Network Topology Suggestion Tool	Generate optimized topology based on bandwidth and load	Simulated Traffic Patterns	Keras, Python
CN004	AI in Networking	AI-based Network Fault Prediction	Predict network failures before occurrence using historical logs	SNMP or Custom Logs	Scikit-learn, TensorFlow
CN005	Blockchain Networking	Blockchain for Secure Routing Table Sharing	Use blockchain to secure inter-router route exchange	Simulated Network Topology	Ethereum, Solidity, Python
CN006	Campus Network Security	BYOD Device Access Control	Monitor and control Bring Your Own Device activity	Local Campus Logs	NAC Tools, Python
CN007	Cloud Networking	SDN-based Data Center Traffic Management	Control east-west/north-south traffic in a DC	DC Topology Simulated	Mininet, ONOS Controller
CN008	Cloud Networking	Elastic Load Balancer in Multi-Tenant Cloud	Dynamically balance tenant loads using flow analysis	Simulated Cloud Requests	OpenStack, Python
CN009	Cloud-Edge Networks	Task Offloading between Edge and Cloud	Optimize where to run latency-sensitive tasks	IoT Task Dataset	Docker, Kubernetes, Mininet
CN010	Cognitive Networks	AI-Powered Cognitive Router	Train router to make intelligent path choices using past data	Routing History	Deep RL, Python
CN011	Cognitive Radio Networks	Dynamic Spectrum Access Simulation	Enable intelligent spectrum sharing among users	CRN Simulation	MATLAB, GNU Radio
CN012	Data Center Networking	Traffic Engineering in Fat-Tree Topology	Optimize routing in large-scale DC networks	Data Center Traffic Dataset	Mininet, SDN Controller
CN013	Data Center Networks	ECMP vs WCMP for Load Balancing	Compare Equal and Weighted Cost MultiPath routing	DCN Simulations	NS3, SDN Controller
CN014	Delay Tolerant Networks	Epidemic Routing Simulation	Simulate data delivery in delay-tolerant networks	DTN Sim	The ONE Simulator
CN015	Delay-Tolerant Networks	Spray and Wait Routing Simulation	Improve delivery ratio in sparse, intermittent networks	DTN Traffic Logs	The ONE Simulator
CN016	DNS	DNS Performance Optimizer	Reduce DNS resolution time using caching and anycast	Simulated DNS Logs	Python, DNS Resolver APIs
CN017	DNS Security	DNSSEC Simulation and Resolver Validation	Demonstrate how DNSSEC protects name resolution	DNS Logs	BIND, DNSViz, Python
CN018	Edge-AI Networks	AI Model Offloading in Edge Network	Offload AI processing to nearby edge nodes based on latency &	AI Task Dataset	TensorFlow Lite, MQTT,
CN019	Fog Computing	Resource Allocation in Fog Networks	Dynamically place tasks across edge/fog/cloud layers	Simulated IoT Requests	Python, EdgeSim
CN020		Latency-Aware Task Offloading Algorithm	Reduce task response time in hybrid edge-fog-cloud	Simulated IoT Requests	CloudSim, FogSim
CN021	Future Internet	6G Network Topology Simulation	Simulate massive device connectivity and Terahertz use cases	Hypothetical 6G Topologies	NS3 (extended), MATLAB
CN022		Named Data Networking Simulation	Simulate NDN architecture for data-centric networks	NDN Trace Logs	ndnSIM, NS3
CN023	Green Networking	Energy-aware Network Topology Design	Reduce power usage by dynamically switching links	Power-aware Network Topologies	MATLAB, NS3
CN024		Thermal-Aware Routing in Data Centers	Prevent hotspots in DCNs by dynamic rerouting	Temperature Logs	NS3, Custom Thermal
CN025	Hybrid Networks	5G and Wi-Fi Offloading Strategy	Optimize user traffic between Wi-Fi and 5G	Simulated Traffic Logs	NS3 + Wi-Fi + LTE
CN026	Network Measurement	Latency Mapping of Internet Paths	Create a real-time map of latencies between multiple regions	Public Ping Tools	RIPE Atlas, Python
CN027	IoT & 6LoWPAN	IPv6 over Low-power WPAN Routing	Simulate RPL over 6LoWPAN for smart applications	Simulated IoT Data	Cooja, Contiki OS
CN028	IoT + Edge Networks	Low-Latency Sensor Data Aggregator	Aggregate and pre-process data close to sensors	Sensor Streams	Node.js, MQTT, Edge
CN029		Adaptive Duty Cycling for Sensor Nodes	Save energy by adjusting wake-up cycles based on environment	Sensor Readings	Cooja, Contiki OS
CN030	IoT Network	6LoWPAN Routing using RPL	Implement IPv6 routing in constrained networks	Cooja Simulation	Contiki OS, Cooja
CN031		Energy-Efficient Routing in WSN	Extend battery life of sensor nodes via smart routing	Simulated WSN Topology	Cooja, Contiki OS
CN032	Mobile Ad Hoc Networks	Link Stability Prediction in MANETs	Predict and select stable routes in high-mobility environments	Mobility Traces	NS3, RNN, LSTM
CN033	Mobile Networks	4G vs 5G Handoff Delay Analysis	Compare handoff latency between generations	Simulated Mobility Logs	NS3, LTE Module
CN034		LTE QoS Scheduling Algorithm Simulation	Evaluate various scheduling policies (RR, PF, Max-CQI)	LTE Topologies	NS3-LTE Module
CN035		Dynamic Handoff Management in 5G	Minimize delay and packet loss during handoff in mobile 5G	Simulated 5G Logs	NS3 + 5G Module

CN036	MPLS Networks	MPLS Path Label Optimization	Optimize label switching and reduce congestion	Custom MPLS Logs	GNS3, Quagga, Python
CN037	Multi-Access Edge Computing	Task Scheduling in MEC Environments	Reduce delay by distributing tasks to optimal edge server	IoT Tasks Dataset	MEC Simulator, EdgeSim,
CN038	Multicast Routing	Efficient Multicast Tree Construction	Create minimum-cost multicast trees	Random Graph Topologies	NetworkX, Python
CN039	Network Automation	SDN-based Automated Firewall Rules	Auto-update rules based on network behavior	Mininet Logs	Python, RYU/POX
CN040	Network Forensics	Botnet Detection using Flow Patterns	Identify botnet C&C channels in network flow	CTU-13 Botnet Dataset	Scikit-learn, Suricata, Bro
CN041	Network Load Balancing	Multi-Gateway Load Balancer	Balance incoming load across redundant gateways	Simulated Gateway Traffic	HAProxy, Nginx, Bash
CN042	Network Management	Auto-Healing Network using SNMP + AI	Monitor faults and automatically recover network components	SNMP Logs	PySNMP, ML, Anomaly
CN043	Network Monitoring	Real-Time Network Bandwidth Monitor	Monitor per-device data usage	Live Network	Python, SNMP, Wireshark
CN044		Anomaly Detection in Network Traffic	Use ML to detect traffic spikes and intrusions	UNSW-NB15, CICIDS2017	Scikit-learn, Pandas, Keras
CN045		Custom Packet Sniffer	Build a sniffer tool for specific protocol layers	Live Capture	Python (socket, scapy)
CN046	Network Resilience	Fault-Tolerant Backbone Network Design	Design resilient core network with high availability	Topology Graphs	NetworkX, MATLAB
CN047	Network Security	ARP Spoofing Detection System	Detect and prevent MITM attacks in LANs	Local Packet Captures	Scapy, Python
CN048		IP Spoofing Prevention using Packet Filtering	Prevent spoofing via packet inspection rules	Custom Packet Traces	IPTables, Wireshark
CN049		Encrypted DNS (DoH/DoT) vs Traditional DNS	Evaluate privacy and latency differences	DNS Logs	Wireshark, DoH APIs
CN050		Honeygot with Traffic Pattern Analysis	Trap and analyze malicious actors via honeypot	Honeygot Logs	Cowrie, ELK Stack
CN051	Network Simulation	IPv4 vs IPv6 Throughput Analysis	Analyze packet loss, jitter, and latency over IPv4/IPv6 networks	NS3 Simulator	NS3, Wireshark
CN052	Network Slicing	5G Network Slice Simulation	Allocate slices to IoT, AR/VR, and eMBB use cases	Simulated 5G Topology	NS3 + 5G-LENA
CN053		IoT Slice Isolation via SDN	Isolate medical, industrial, and home IoT traffic via slicing	Simulated IoT Topologies	SDN Controller, Mininet
CN054	Network Virtualization	Virtual Network Embedding Optimization	Map virtual networks to physical infrastructure	Custom Graph Dataset	Python, NetworkX
CN055	NFV (Network Function Virtualization)	VLAN Management System	Automatically manage and isolate virtual LANs	Simulated VLAN Data	GNS3, Cisco Packet Tracer
CN056		Service Function Chaining (SFC) Simulation	Chain virtual network functions dynamically	NS3-VNF Extension	NS3, Python
CN057		Firewall as a Virtual Function	Deploy firewall service as a virtual network function	Custom Ruleset	OpenStack, Python, VNF
CN058	Optical Networks	Wavelength Allocation in WDM Network	Optimize spectrum usage in fiber-optic communication	Simulated Optical Network	MATLAB, NS3
CN059		Fiber Channel Routing Optimization	Enhance throughput in optical networks	Optical Topology Data	MATLAB, NS2 Optical
CN060		QoS-aware Lightpath Routing	Ensure QoS while assigning optical paths	WDM Simulation Data	NS2 Optical Extensions,
CN061	Overlay Networks	Peer-to-Peer Network Performance Simulation	Analyze latency and throughput in P2P overlays	Simulated Overlay Logs	PeerSim, OMNeT++
CN062	P4 Programmable Networks	Custom Header Parsing using P4	Define and parse new protocol headers with data plane	P4 Program Input	P4, BMv2 Switch, Mininet
CN063	Protocol Comparison	TCP Variants Performance Evaluation	Compare TCP Tahoe, Reno, Vegas, Cubic	NS2/NS3	NS2/NS3, Matplotlib
CN064	QoE Monitoring	Video Streaming Quality Estimator	Monitor user experience for real-time streaming apps	YouTube QoE Logs	Python, FFMPEG,
CN065		Gaming QoE Prediction Model	Predict user experience in cloud gaming	Game Traffic Dataset	Keras, ML, Wireshark
CN066	QoS Routing	Bandwidth-Constrained Shortest Path Algorithm	Route data with QoS constraints	Weighted Graphs	NetworkX, Python
CN067	Quality of Service	QoS Routing for VoIP Traffic	Prioritize voice packets in IP network	VoIP Traffic Sim	NS2/NS3, SIPp
CN068	Quantum Networking	Quantum Key Distribution Simulation	Simulate QKD for secure communication channels	QKD Algorithms / Sim Data	SimulaQron, Python
CN069	Real-Time Networks	Real-Time Traffic Scheduling in TSN	Schedule deterministic flows with time-sensitive networking	Industrial Traffic Logs	NS3, TSN Simulator
CN070	Routing Protocols	Dijkstra vs Bellman-Ford Comparison	Compare performance of routing algorithms in large-scale	Simulated Topologies	Java, Python, GNS3
CN071	Satellite Communication	LEO Satellite Handoff Simulation	Analyze seamless transition between satellites during mobility	Orbital Models	STK, NS3

CN072	Satellite Networks	LEO Network Topology Optimization	Optimize inter-satellite links and latency	Orbital Simulations	STK, NetworkX, Python
CN073	SDN	DoS Detection and Mitigation in SDN	Detect flooding attacks and block at the controller level	Mininet + POX	RYU Controller, Floodlight,
CN074	SDN & IoT	SDN Controller for Smart Home Automation	Use SDN to dynamically control IoT devices	Simulated Home Network	POX/RYU, Mininet-IoT
CN075	SDN + AI	Self-Learning SDN Controller	Train controller to manage flows autonomously	Traffic Logs	RYU, Python, RL
CN076	SDN + IoT	Dynamic Bandwidth Allocation in IoT	Allocate bandwidth based on sensor criticality	Simulated IoT Flow Logs	RYU Controller, Python
CN077	SDN + QoS	Dynamic QoS Enforcement for Video Streaming	Prioritize video traffic using SDN-based flow classification	Streaming Logs	POX Controller, Wireshark
CN078	SDN Monitoring	SDN Topology Visualizer with Real-time Alerts	Visualize flows and alert controller failures	Mininet Logs	Flask, RYU, D3.js
CN079	SDN Security	Flow Rule Verification in SDN	Detect and resolve conflicts in SDN flow tables	Mininet, Flow Tables	Python, POX Controller
CN080	SD-WAN	Dynamic Path Selection in SD-WAN	Improve WAN efficiency using policy-based routing	Simulated WAN Network	Python, Mininet-WiFi,
CN081	SD-WAN	Application-aware Routing in SD-WAN	Route traffic based on application sensitivity (VoIP, Video, etc.)	Simulated WAN Logs	SD-WAN Emulator, Python
CN082	Smart Campus Networks	IoT-Based Smart Lighting Control	Optimize energy via network-controlled lighting systems	Sensor Data	ESP32, MQTT, Node-RED
CN083	Smart Grid Networking	Secure Network Protocols for Smart Grids	Implement secure communication between smart meters and	Simulated Grid Network	Cooja, Contiki
CN084	Software-Defined Networking (SDN)	Load Balancing in SDN Controller	Implement dynamic load balancing in SDN network	Mininet	POX/RYU Controller,
CN085	Transport Layer	UDP Flood Attack Simulator	Simulate a UDP flooding DoS attack and propose mitigation	NS3 or Custom Simulation	NS3, Wireshark
CN086		QUIC Protocol Evaluation	Evaluate Google QUIC performance over HTTP/2	Web Traffic Logs	Wireshark, QUIC-enabled
CN087	Vehicular Networks	VANET Routing Protocol Simulation	Evaluate AODV, DSR in vehicle communication	City Mobility Models	NS3-VANET, SUMO
CN088		Traffic Congestion Detection using V2V	Predict traffic using vehicle-to-vehicle communication	VANET Logs	NS3-VANET, SUMO
CN089		RSU (Road Side Unit) Assisted VANET	Improve routing performance using RSUs	SUMO Mobility Data	NS3-VANET, Python
CN090	Wired Network	TCP Congestion Control Visualizer	Visualize TCP congestion window behavior in real-time	NS2/NS3 Logs	NS2/NS3, Python
CN091	Wireless Mesh Networks	Mesh Topology Auto-Recovery	Detect and recover from node/link failures in WMNs	Simulated Mesh Logs	NS2, Custom Scripts
CN092		Self-Healing Routing in WMNs	Recover from node failures automatically	Mesh Topology Logs	NS2/NS3, Python
CN093	Wireless Network	Packet Delivery Optimization in MANETs	Improve routing for mobile nodes in MANET	Random Waypoint Mobility	NS2/NS3, AODV/DSDV
CN094		Wi-Fi Interference Analyzer	Analyze impact of channel overlap on performance	Local Wi-Fi Logs	Wireshark, NetSpot
CN095		Wi-Fi Channel Assignment using AI	Avoid co-channel interference using intelligent allocation	Local Network Simulation	Python, NS3
CN096		Wi-Fi Roaming Analysis	Measure handover delay across access points in campus	Wi-Fi Signal Logs	Android App, Python
CN097		RF Interference Mapping using Crowdsourcing	Map signal interference using user smartphones	Signal Strength Logs	Android, GIS APIs
CN098	Wireless Sensor Networks	Intelligent Wi-Fi Handoff using ML	Predict the best AP to switch using real-time RSSI	RSSI Dataset	Scikit-learn, Android App
CN099		Clustering Algorithms for WSN	Implement LEACH/HEED for hierarchical routing	Simulated Sensor Data	MATLAB / Contiki OS
CN100		Sleep Scheduling Algorithm for Energy Saving	Maximize sensor lifetime using smart sleep scheduling	WSN Simulation	Contiki, Cooja

Expected Outcome
6G channel modeling insights
Cross-layer optimization model
Auto-designed network layout
Proactive fault mitigation
Tamper-proof routing updates
Secure network access enforcement
Improved data center flow performance
Scalable multi-tenant load balancer
Cost and latency-efficient scheduling
Adaptive routing engine
Efficient spectrum utilization model
Reduced DC congestion
Best-fit load balancing strategy
Report on delivery latency and success rate
Delay-tolerant message delivery system
Faster DNS query resolution
DNSSEC-enabled lookup service
Real-time AI with reduced latency
Fog resource optimization model
Delay-sensitive job scheduler
6G use case evaluation framework
Content-based forwarding simulator
Energy-efficient routing algorithm
Balanced temperature-aware routing
Load-balanced offloading mechanism
Global latency visualizer
Low-power IPv6 IoT communication
Edge-based real-time monitoring
Low-power adaptive scheduling
Scalable IoT routing protocol
Lifetime enhancement of WSN
Reliable MANET routing protocol
Handoff delay performance report
Optimal scheduling strategy
Fast handoff strategy

Efficient LSP path planner
Fast and efficient task execution
Optimized multicast dissemination tree
Self-configuring firewall
Botnet detection system
High availability and reduced bottleneck
AI-driven network management system
Bandwidth usage dashboard
Smart anomaly detector
Layer-wise packet analyzer
Fault-tolerant network layout
Real-time ARP spoofing alert
Firewall-based filtering strategy
Privacy-focused DNS recommendation
Intruder profiling dashboard
Detailed comparison report
Dynamic slice performance report
Secure, QoS-based IoT network slicing
Efficient resource mapping
VLAN configuration tool
Flow-based NF orchestration
Lightweight virtual firewall
Resource-optimized lightpath allocation
Efficient wavelength allocation
QoS-enabled path selection
Peer performance report
Custom protocol interpreter
Fairness, delay, throughput comparisons
Automated QoE scoring dashboard
QoE forecasting engine
QoS-aware dynamic routing
VoIP latency and jitter optimization
Quantum key exchange model
Delay-bounded packet delivery
Performance metrics and visualization
Smooth satellite connectivity report

Satellite communication planner
Secure SDN application
Smart home control dashboard
Autonomous network flow controller
Priority-based bandwidth distribution
Lag-free media QoS support
Interactive SDN dashboard
Conflict-free flow rule validation
Optimized WAN routing strategy
App-prioritized path selection
Energy-efficient smart lighting
Secure smart energy communication
Balanced network traffic system
DoS visualization and protection layer
Performance gain report
VANET protocol performance comparison
Congestion alert system
Enhanced delivery ratio in VANET
Dynamic congestion graph display
Fault-tolerant mesh routing
Resilient mesh routing system
Reliable mobile ad hoc communication
Interference heatmap
AI-driven Wi-Fi channel optimization
Seamless handover analysis report
Community-based RF heatmap
Smart handoff tool
Cluster-based energy-efficient routing
Prolonged network uptime

Sl. No	Sub-Domain	Project Area	Tentative Title	Dataset	Tools Used
CEF001	Cloud + AI	AI-Powered Auto Resource Recommendation Engine	Suggest VM/storage/database based on application behavior	Cloud Usage Logs	Keras, GCP BigQuery, Python
CEF002	Cloud + Blockchain	Smart Contract-Based SLA Management	Automate SLA violation detection and penalty processing	SLA Logs	Ethereum, Solidity, Web3.js
CEF003	Cloud + Federated AI	Cross-Hospital Disease Prediction using Federated Cloud	Train disease models across hospitals without sharing private data	Simulated Health Datasets	PySyft, TensorFlow, AWS
CEF004	Cloud + HPC	Scientific Simulation Offloading to Cloud GPUs	Run compute-intensive tasks (e.g., protein folding) on cloud GPU	Simulation Scripts	AWS EC2 GPU, Docker
CEF005	Cloud + IoT	Multi-Tenant Smart Building Monitoring Platform	Support multiple users monitoring different IoT systems in cloud	IoT Sensor Data	Firestore, Python, Node.js
CEF006	Cloud + Quantum	Quantum Random Number Generator on Cloud	Generate true random numbers using quantum principles on cloud	Qiskit Simulated Circuits	IBM Quantum, Qiskit
CEF007	Cloud + Security	Cloud Log Tampering Detection using Blockchain	Ensure cloud log integrity and prevent unauthorized changes	Simulated Log Files	Hyperledger, AWS S3
CEF008	Cloud AI	AutoML Pipeline for Cloud-based Model Deployment	Build, train, and deploy model automatically	UCI ML Datasets	Google AutoML, Python
CEF009	Cloud Application	Cloud-based Document Collaboration App	Allow real-time editing and sharing of docs	Firestore Realtime DB	React, Firestore, Google Drive API
CEF010	Cloud Automation	Auto-Scaling Machine Learning Jobs in Cloud	Launch more instances as workload increases	ML Job Queue Simulation	Kubernetes, AWS EC2, HPA
CEF011		Auto-Tagging & Budget Alerts for Cloud Usage	Categorize resources and send alerts on crossing usage thresholds	AWS/Azure Billing Data	Lambda, SNS, Python
CEF012	Cloud Compliance	GDPR Compliance Checker Tool	Check data storage against GDPR requirements	Simulated Logs	Python, Compliance Rules Engine
CEF013	Cloud Compliance	Data Residency Tracker for Global Cloud Storage	Ensure data storage complies with country-specific regulations	Multi-region Logs	Python, AWS SDK, GeoIP APIs
CEF014	Cloud Computing	Dynamic Resource Allocation in Cloud	Optimize VM provisioning based on demand	CloudSim	CloudSim, Java
CEF015	Cloud Cost Optimization	Auto Shutdown Idle Instances Script	Save cost by identifying and shutting idle VMs	AWS Logs	Boto3 (AWS SDK), Python
CEF016	Cloud Data Governance	Data Lineage and Provenance Tracking in Cloud	Trace origin and changes of data across services	Log Records	Apache Atlas, AWS Glue
CEF017	Cloud Data Processing	Serverless Big Data Pipeline	Ingest, transform, and visualize big data without managing	Simulated IoT Streams	AWS Lambda, Glue, Kinesis, QuickSight
CEF018	Cloud Data Warehouse	Scalable Data Lake using AWS S3 and Athena	Create a queryable, serverless data warehouse	CSV/Parquet Data	AWS S3, Athena, Glue
CEF019	Cloud DevOps	CI/CD Pipeline in Cloud for Python Projects	Automate build and deployment with version control	GitHub Repos	Jenkins, Docker, AWS
CEF020		Serverless CI/CD Pipeline using GitHub Actions	Deploy serverless app automatically via CI/CD	Sample Web App Repo	GitHub Actions, AWS Lambda, S3
CEF021	Cloud Education	Adaptive Learning System using Cloud & Edge	Deliver content based on learner's pace and behavior	EdTech Usage Data	Firestore, TensorFlow, Android
CEF022	Cloud File Management	Secure Cloud File Sync with Conflict Resolution	Sync files with encrypted version control and conflict	Folder Changes Dataset	Dropbox API, Python, SQLite
CEF023	Cloud for Education	Online Lab Simulation System using Cloud	Create virtual labs for practical simulations	Code/Tool Repositories	AWS AppStream / GCP Edu APIs
CEF024	Cloud Function as a Service (FaaS)	Serverless Chatbot on AWS Lambda	Deploy event-driven chatbot without servers	Chat Logs	AWS Lambda, API Gateway, Python
CEF025	Cloud Integration	IoT-Cloud Integration Platform with Auto Device Mapping	Auto-register new IoT devices into cloud system	IoT Metadata Logs	AWS IoT Core, Firestore, Python
CEF026	Cloud Load Balancing	Load Balanced Web App Deployment	Distribute user requests across cloud servers	Simulated Web Traffic	HAProxy, AWS/GCP
CEF027	Cloud Load Testing	Simulate Concurrent User Load on Web App	Measure app performance under peak load	Sample Web App	JMeter, BlazeMeter
CEF028	Cloud Migration	Legacy to Cloud App Migration Estimator	Recommend cloud service equivalents for legacy software	Application Metadata	Python, AWS Well-Architected Tools
CEF029	Cloud Monitoring	Multi-Cloud Usage Tracker Dashboard	Track and display usage across cloud providers	AWS/Azure APIs	Grafana, Prometheus, Python
CEF030	Cloud Networking	SDN Integration in Cloud Infrastructure	Use SDN to route cloud traffic dynamically	CloudSim + SDN	Mininet, OpenFlow, CloudSim
CEF031		SD-WAN Simulator for Multi-Site Enterprise Cloud	Simulate wide area network across branches over	Network Topologies	GNSS, SD-WAN Open Source Tools
CEF032	Cloud Orchestration	Resource Scheduling using OpenStack Heat	Use Heat templates to auto-deploy infrastructure	VM Topologies	OpenStack, Heat Template Language
CEF033	Cloud SaaS	Serverless eCommerce Platform using Microservices	Develop a scalable online store using serverless architecture	Product and Order Data	AWS Lambda, API Gateway, DynamoDB
CEF034	Cloud Security	Role-Based Access Control System (RBAC)	Enforce access control over cloud services	Access Logs	Firestore, Python, RBAC Policy
CEF035		Intrusion Detection System on Cloud Logs	Analyze logs for anomalies in user access	AWS CloudTrail, Public IDS	Python, ELK Stack

CEF036		Anti-Ransomware Data Backup System	Detect ransomware attack and automatically back up safe version	Local Folder Simulation	Python, AWS S3, Backup Scripts
CEF037	Cloud Simulation	Dynamic SLA Violation Detection	Identify when SLA performance metrics are missed	Simulated SLA Logs	CloudSim, Python
CEF038	Cloud Storage	Secure File Storage on Cloud with Encryption	Store files securely using AES/RSA encryption	Local File Dataset	Python, AWS/GCP, Cryptography
CEF039		Blockchain-Based Cloud File Integrity System	Verify file integrity using hash stored on blockchain	Sample Documents	IPFS, Ethereum, Solidity
CEF040	Cloud Testing	Test Automation Infrastructure in Cloud	Automate UI/API testing pipeline	Public Test Cases	Selenium Grid, AWS EC2
CEF041	Cloud Workflow	AI-based Test Case Generator for Cloud APIs	Auto-generate test cases for APIs using AI	Swagger API Specs	GPT API, Postman, Python
CEF042		Bioinformatics Pipeline as a Cloud Workflow	Execute DNA sequencing tasks in parallel on cloud infrastructure	Public FASTA Dataset	Nextflow, AWS Batch, Docker
CEF043	Edge + Drones	Edge AI for Aerial Crop Health Detection	Use edge devices with drones for field analytics	NDVI Drone Images	Jetson Nano, TensorFlow Lite
CEF044		Fog-Controlled Drone Surveillance	Coordinate multiple drones using fog node for area coverage	Flight Logs	NodeMCU, FogSim, Drone SDK
CEF045	Edge + Industry 4.0	Predictive Maintenance for Machines at Edge	Predict failures of factory machines using vibration and heat	Vibration Dataset	Edge Device, Scikit-learn, MQTT
CEF046	Edge + Logistics	Parcel Sorting System using Edge Vision	Use AI at the edge for scanning and sorting packages	Parcel Image Dataset	TensorFlow Lite, Raspberry Pi
CEF047	Edge + Retail	Checkout-Free Shopping using Edge Cameras	Detect products picked by users using edge vision	Shelf Interaction Dataset	OpenCV, YOLOv5, Raspberry Pi
CEF048	Edge + Smart City	Garbage Monitoring and Optimization using Edge AI	Use cameras to detect bin status and plan collection routes	Urban Garbage Images	Edge TPU, OpenCV, Android App
CEF049	Edge AI	On-Device Object Detection using Edge AI	Deploy ML model for detection on Raspberry Pi	COCO Dataset	TensorFlow Lite, OpenCV
CEF050		Person Detection on Jetson Nano	Deploy AI model for detecting people using NVIDIA Jetson	COCO Dataset	Jetson Nano, TensorFlow Lite, OpenCV
CEF051		Real-time Mask Detection at Edge	Detect face masks on individuals locally	Face Mask Dataset	OpenCV, Edge Device, TensorFlow Lite
CEF052		Intruder Detection Using Edge Thermal Cameras	Detect human motion in night using thermal imaging	Thermal Image Dataset	Jetson Nano, OpenCV, TensorFlow Lite
CEF053	Edge AI + Healthcare	Fall Detection System using Edge Cameras	Detect accidental falls in elderly care centers using real-time	Fall Dataset	OpenCV, Raspberry Pi, TensorFlow Lite
CEF054	Edge Analytics	Real-Time Vehicle Speed Monitoring at Edge	Capture and analyze vehicle speed using cameras	Traffic Video Footage	OpenCV, Python, Edge Device
CEF055	Edge Analytics	Smart Retail Shelf Monitoring at Edge	Detect low stock using edge-based camera analysis	Retail Shelf Images	OpenCV, Edge TPU, TensorFlow Lite
CEF056	Edge Blockchain	Blockchain-Backed Sensor Data Authentication	Secure edge-collected data using immutable logs	Sensor Data Logs	Ethereum, Web3, Raspberry Pi
CEF057	Edge Caching	Predictive Content Caching at Edge Nodes	Cache popular content using ML predictions	Access Logs	Keras, EdgeSim, Python
CEF058	Edge Collaboration	Vehicle-to-Vehicle Edge Collaboration System	Vehicles exchange data to optimize navigation	SUMO Mobility Data	Raspberry Pi, MQTT
CEF059		Latency-Sensitive Task Offloading	Offload processing to edge devices to reduce latency	Simulated IoT Data	EdgeSim, Python
CEF060	Edge Computing	Industrial Sensor Data Analysis at Edge	Analyze sensor data locally to reduce data sent to cloud	Industrial IoT Dataset	EdgeX Foundry, Python
CEF061	Edge DevOps	Facial Recognition on Edge	Perform authentication at the edge device	LFW Dataset	Raspberry Pi, OpenCV, dlib
CEF062		Continuous Deployment Pipeline on Edge Cluster	Deploy containers to edge with DevOps best practices	Sample App Deployment	Docker, GitLab CI/CD, K3s
CEF063	Edge ML Monitoring	Model Drift Detection at Edge	Monitor accuracy drop over time on edge ML models	Real-time Sensor Data	EdgeSim, Scikit-learn
CEF064	Edge Orchestration	Kubernetes at Edge for Microservice Deployment	Manage microservices at the edge	Simulated Deployment	K3s (Lightweight K8s), Docker
CEF065	Edge Orchestration	Lightweight Kubernetes Deployment on Edge Clusters	Orchestrate containerized apps on limited-resource edge devices	Microservice Logs	K3s, Docker, Helm
CEF066	Edge Robotics	Real-Time Obstacle Avoidance using Edge AI	Enable smart robots to avoid obstacles using on-board AI	Obstacle Detection Dataset	Arduino, Jetson Nano, OpenCV
CEF067	Edge Security	Secure Communication Protocol for Edge Devices	Implement encryption + authentication for low-powered devices	Sensor Communication Logs	MQTT, AES-256, Python
CEF068	Edge Storage	Decentralized Edge Storage System	Build peer-to-peer storage network for low-latency data access	Simulated Edge Nodes	IPFS, Go, Raspberry Pi
CEF069	Edge Video Analytics	Emotion Recognition from Video on Edge Devices	Detect emotions from facial expressions at the edge	FER2013 Dataset	OpenCV, Edge TPU, TensorFlow Lite
CEF070	Federated Edge	Federated Learning for Healthcare at Edge	Train models on decentralized health data	Health Data (Simulated)	PySyft, PyTorch, Edge Devices
CEF071		Federated Learning for Personalized News	Train models on-device to protect user privacy	News Logs (Simulated)	PySyft, TensorFlow, Edge Devices

CEF072	Fog & Smart City	Fog-Based Parking Management System	Real-time parking availability & booking	Parking Lot Dataset	FogSim, NodeMCU, Android App
CEF073	Fog + Air Quality	Real-Time Air Quality Index (AQI) at Fog Nodes	Measure and locally alert poor AQI conditions	Simulated AQI Data	NodeMCU, FogSim, Blynk
CEF074	Fog + Smart Grid	Load Forecasting for Smart Grid using Fog AI	Predict electricity load at fog level to balance supply	Smart Grid Dataset	iFogSim, Keras, NodeMCU
CEF075	Fog + Transportation	Public Bus ETA System using Fog Nodes	Provide accurate ETAs using edge-based processing near stations	Transit GPS Data	NodeMCU, MQTT, FogSim
CEF076	Fog AR/VR	Fog Support System for Multiplayer AR Gaming	Reduce latency in augmented reality by using local fog servers	Game Event Logs	Unity, FogSim, WebRTC
CEF077	Fog Computing	Fog-based Smart Traffic Management	Use fog nodes to process traffic data locally	Traffic Dataset (SUMO)	iFogSim, Node-RED, Raspberry Pi
CEF078		Health Monitoring using Fog Nodes	Monitor patient vitals at fog layer before sending to cloud	Simulated Health Data	iFogSim, NodeMCU, MQTT
CEF079		Fog Gateway for Smart Agriculture	Collect and process data from soil/moisture sensors locally	Simulated Agri Data	NodeMCU, MQTT, iFogSim
CEF080		Real-time Water Quality Monitoring using Fog	Collect and analyze water parameters locally	Simulated Sensor Data	Raspberry Pi, Node-RED, FogSim
CEF081	Fog Fire Alert	Forest Fire Detection with Fog AI Camera Nodes	Detect fire smoke via edge/fog before cloud processing	Forest Image Dataset	OpenCV, iFogSim, Raspberry Pi
CEF082	Fog for Surveillance	Vehicle Number Plate Recognition on Fog Nodes	Recognize number plates in real-time for security	ANPR Dataset	OpenALPR, FogSim, Python
CEF083	Fog Health	Fog-Based Smart Ambulance Routing	Route emergency vehicles based on traffic and patient condition	Google Maps API + Health Logs	FogSim, GPS Modules, Android App
CEF084	Fog Healthcare	Real-Time Seizure Detection at Fog Node	Analyze EEG signals at fog layer for emergency alert	CHB-MIT EEG Dataset	iFogSim, Python, Scikit-learn
CEF085	Fog Load Balancing	Resource-Aware Load Balancer in Fog Layer	Distribute load among fog nodes based on latency and power	Simulated Task Logs	FogSim, Python
CEF086	Fog ML Deployment	Deploy ML Model on Fog Gateway for Real-Time	Detect anomalies or trends in local data before cloud processing	Sensor Logs	Flask API, FogSim, Scikit-learn
CEF087	Fog Robotics	Low-Latency Control for Collaborative Robots	Coordinate robots via local fog servers	Simulated Robo Data	ROS, EdgeFog Framework
CEF088	Fog Robotics	Collaborative Path Planning via Fog Servers	Plan robot paths using fog layer computation	Simulated Paths	ROS, FogSim
CEF089	Fog Security	Authentication Mechanism at Fog Layer	Authenticate data requests before cloud transmission	IoT Gateway Simulation	Python, FogSim, MQTT
CEF090	Fog Smart Homes	Distributed Smart Home Controller	Use fog to control lights, ACs, doors, etc., locally	Home Automation Logs	Node-RED, ESP32, MQTT
CEF091	Fog Video Streaming	Adaptive Bitrate Streaming using Fog Cache	Reduce buffering using fog-based video cache	Video Streams	MPEG-DASH, Fog Node, VLC
CEF092	Fog-AI Integration	Anomaly Detection in Industrial IoT using Fog	Detect equipment anomalies locally at fog layer	IIoT Sensor Data	iFogSim, Scikit-learn
CEF093	Fog-based Emergency	Emergency Alert System for Smart Buildings	Trigger alert during abnormal sensor behavior	Fire/Gas Sensor Logs	NodeMCU, MQTT, FogSim
CEF094	Green Cloud	Carbon-Aware Cloud Resource Allocation	Allocate resources based on carbon emission scores	Energy Grid Data	CloudSimGreen, Python
CEF095		Energy-Efficient VM Scheduling in Cloud	Reduce power consumption by efficient VM placement	CloudSimGreen Logs	CloudSimGreen, Java
CEF096	Green Edge Computing	Dynamic Voltage and Frequency Scaling for Edge Nodes	Save energy based on workload fluctuations	Energy Usage Simulation	Python, Raspberry Pi
CEF097	Multi-Cloud	Cloud Provider Cost Comparison Tool	Compare AWS, Azure, GCP pricing dynamically	Pricing APIs	Python, REST APIs
CEF098	Multi-Cloud Migration	Data Transfer Optimizer for Multi-Cloud	Optimize cost/speed for large data migration	Simulated Data Migration Logs	AWS CLI, Azure CLI, Python
CEF099	Serverless Computing	Function Cold Start Optimization in FaaS	Reduce delay in initial function invocation	Simulated Triggers	AWS Lambda, Node.js, CloudWatch
CEF100	Smart Home Edge	Fog-Based Energy Monitoring for Smart Homes	Track and reduce energy usage in households	IoT Energy Dataset	Raspberry Pi, MQTT, Firebase

Expected Outcome
Smart cloud infra recommender
Trustworthy SLA enforcement
Collaborative and privacy-aware health
High-performance scientific computing
Scalable smart building dashboard
Secure key generation service
Immutable log verification system
End-to-end ML automation
Cloud-based shared document editor
Elastic training job management
Budget control dashboard
GDPR-compliance report
Compliance-aware storage monitoring
Cost-efficient VM scheduler
Cost-efficient cloud management
Transparent data audit trail
Event-driven analytics dashboard
Interactive cloud-based analytics layer
Auto-deployed web app
Fully automated serverless deployment
Personalized learning experience
Reliable sync with rollback feature
Virtual lab for remote learning
Scalable chatbot with minimal infra
Scalable device registration service
Fault-tolerant web deployment
Load report and optimization
Migration cost and feasibility report
Unified usage dashboard
Software-controlled routing
Optimized branch-to-cloud connectivity
Automated infrastructure deployment
High availability online retail system
Secure access system
Log-based intrusion alerts

Auto-backup & recovery system
SLA violation alert system
Encrypted file storage system
Tamper-proof file storage
Auto-scaling test infrastructure
Faster test case generation
Faster genome analysis platform
Precision farming support system
Coordinated drone surveillance system
Downtime reduction in manufacturing
Automated sorting unit
Contactless retail experience
Smart waste management system
Edge AI surveillance system
Edge-powered surveillance system
Public health compliance system
24/7 security surveillance system
Instant emergency alerts
Smart speed alert system
Instant restocking alerts
Tamper-proof sensor data validation
Bandwidth reduction and faster access
Collision and congestion avoidance
Reduced task execution time
Latency-optimized analytics
Low-latency face recognition
Continuous delivery to edge
Alerts on degrading model performance
Lightweight orchestration
Scalable container system for edge
Autonomous mobile robot
Secure sensor communication layer
Fault-tolerant local storage
Smart emotional feedback system
Privacy-preserving health model
Privacy-preserving recommender

Smart parking reservation system
Smart environment alert system
Fog-enabled load prediction
Real-time bus tracking dashboard
Smooth low-latency multiplayer
Smart signal control system
Real-time alert system
Smart irrigation control
Smart water alerting system
Fast fire risk alerts
Smart gate entry control
Time-optimized ambulance dispatch
Seizure alert with low latency
Improved task response time
Reduced round-trip latency
Reduced control delay
Low-latency cooperative navigation
Data filtering at edge
Low-latency smart home manager
Smooth video experience for viewers
Industrial safety monitoring system
Instant localized emergency alert
Environmentally efficient scheduling
Power-aware scheduling policy
Energy-efficient edge workload
Multi-cloud cost dashboard
Cost-efficient migration
Faster response for cold-start scenarios
User energy usage dashboard

Sl. No	Sub-Domain	Project Area	Tentative Title	Dataset	Tools Used
SED001	Agile + DevOps	Kanban Workflow Board with CI/CD Integration	Build task board that triggers pipelines when status changes	Simulated Task Logs	Jira API, GitLab CI/CD
SED002	Agile + UX	User Story to UI Mapper	Convert user stories to basic UI layout suggestions	Story Descriptions	NLP Toolkit, Python
SED003	Agile Analytics	Burn-Up Chart Generator with Forecast	Visualize work done vs scope over time	Sprint Task Logs	Python, Plotly
SED004	Agile Collaboration	Shared Online Sprint Planning Tool	Multiple teams can plan and visualize sprints together	Task Plans	React, Node.js, Firebase
SED005	Agile Compliance	Agile Metrics Dashboard with Burn-down, Velocity	Centralized display of key agile KPIs	Sprint Log Data	Flask, Chart.js
SED006	Agile Development	Scrum-based Bug Tracking System	Develop a bug tracker implementing Agile principles	Simulated Project Bugs	Java, MySQL, Trello API
SED007	Agile Estimation	Story Point Estimator using AI	Use NLP to suggest complexity of user stories	Jira Task Descriptions	GPT API, Python, Agile
SED008	Agile Estimation Tool	Poker Planning App with Analytics	Team-based agile estimation using planning poker	Simulated Team Tasks	Node.js, Socket.io, Firebase
SED009	Agile Metrics	Sprint Burn-Down Chart Generator	Visualize task progress over sprint timeline	Task Completion Logs	Python, Matplotlib
SED010	Agile Tooling	Sprint Velocity Analyzer Tool	Analyze team velocity over past sprints	Jira Exported Reports	Python, Matplotlib
SED011	AI + Software Metrics	Bug Severity Predictor using ML	Predict bug impact from issue description	Bugzilla or GitHub Issues	Scikit-learn, Pandas
SED012	AI in DevOps	AI-based Pipeline Optimizer for Parallel Execution	Reorder CI/CD steps for faster completion	Build History	Reinforcement Learning, Python
SED013	AI-driven QA	Natural Language to Test Case Generator	Convert functional descriptions into test cases	User Stories, Requirements	OpenAI GPT, LangChain
SED014	AI Ops	Incident Auto-Triage Using NLP	Automatically categorize and route IT incidents using ML	ITSM Ticket Logs	BERT, Scikit-learn, Python
SED015	API First Engineering	API Mock + Testing Server Generator	Auto-create mocks and test UI from OpenAPI specs	Swagger/OpenAPI Files	Stoplight, Postman, Node.js
SED016	API Management	API Gateway with Monitoring and Throttling	Build custom API gateway with logging and rate-limiting	Sample REST APIs	Kong API Gateway, Postman, ELK
SED017	Chaos Engineering	Resilience Testing Using Chaos Monkey	Simulate faults and test app resilience	Microservices Setup	Netflix Chaos Monkey, Kubernetes
SED018	CI/CD	Automated Build & Deployment for Web App	Implement end-to-end CI/CD using GitHub and Jenkins	GitHub Sample App	Jenkins, Docker, GitHub Actions
SED019	CI/CD + Mobile	CI/CD for Android App with Firebase Deployment	Automate build, test, and publish APK to Firebase	Sample Android App	GitHub Actions, Firebase App
SED020	Cloud DevOps	Serverless DevOps for Lambda-based Apps	CI/CD and logging for serverless functions	AWS Lambda App	GitHub Actions, AWS SAM
SED021	Cloud-native DevOps	GitOps with Progressive Delivery for Kubernetes	Enable canary, blue-green deployments controlled via Git	K8s Cluster + Git Repos	Argo Rollouts, Kustomize
SED022	Code Analysis	Language Detection and Complexity Analyzer	Analyze language usage, code size, function depth	GitHub Repo Snapshot	Linguist, Python, Lizard
SED023	Code Quality	Static Code Analyzer for Python Projects	Detect code smells, unused variables, complexity	Python Repos	Pylint, Radon, Flake8
SED024	Configuration Management	Server Config Automation using Ansible	Manage and deploy server settings with Ansible	VM Setup Simulation	Ansible, YAML
SED025	Containerization	Dockerized Microservice-based E-Commerce System	Split application into containers and orchestrate	Product/Order Microservices	Docker, Kubernetes
SED026	Developer UX	Developer Friction Tracker	Capture pain points in local dev, CI/CD, reviews	Developer Feedback Logs	Forms, APIs, Dash
SED027	DevOps + Accessibility	Accessibility Analyzer for Front-End Projects	Check for WCAG compliance in web apps	Sample Web Projects	axe-core, Lighthouse, Puppeteer
SED028	DevOps + AI	Code Reviewer Bot using LLMs	Auto-review pull requests for code quality & suggestions	GitHub Pull Requests	GPT API, Python, GitHub Actions
SED029	DevOps + Alerting	Error Alert System via Slack/MS Teams	Trigger alerts on build/test failure or infra issue	Jenkins Pipeline Logs	Slack API, Python, Jenkins
SED030	DevOps + Backup	Automated Cloud Backup & Restore CLI	Schedule and manage cloud backups	Cloud Storage Logs	AWS CLI / GCP SDK, Cron,
SED031	DevOps + Blockchain	Immutable Deployment Logs using Blockchain	Prevent tampering with CI/CD logs	Jenkins Build Records	Ethereum, Solidity, IPFS
SED032	DevOps + ChatOps	ChatOps Bot for Build, Deploy, and Logs in Slack	Execute CI/CD tasks from messaging apps	Slack Webhooks	Python, Slack API, Jenkins
SED033	DevOps + Cloud	Infrastructure as Code (IaC) for Web App Hosting	Provision infra via code for web hosting	Terraform Script Repo	Terraform, AWS/GCP
SED034	DevOps + Container	Monitoring Containerized Apps with Prometheus &	Real-time container stats and visualization	Docker Metrics	Docker, Prometheus, Grafana
SED035	DevOps + Data Engg	DataOps Pipeline with Quality Gates	ETL pipeline with schema checks, anomaly detection	CSV / SQL / JSON Files	Great Expectations, Apache

SED036	DevOps + Documentation	DevOps Handbook Generator from Pipelines	Create SOPs from Jenkins/GitHub workflows	YAML Pipeline Files	Python, MkDocs
SED037	DevOps + Ethics	Bias Detector in AI Deployment Pipelines	Audit AI models for bias during CI/CD	AI Model Artifacts	Fairlearn, Scikit-learn
SED038	DevOps + Explainability	CI/CD Failure Explanation Engine using LLM	Use LLM to generate human-readable root cause for pipeline	Jenkins Logs	GPT API, LangChain, Python
SED039	DevOps + Gamification	DevOps Leaderboard System	Rank contributors on build, commits, reviews, tests	Git Logs, Jenkins Reports	Python, SQLite, Dash
SED040	DevOps + GitOps	GitOps for Kubernetes-based App Deployment	Enable infrastructure changes via Git	K8s YAMLs	ArgoCD, GitHub, Kubernetes
SED041	DevOps + Green IT	Carbon Footprint Estimator for DevOps Pipelines	Estimate energy use and emissions of each pipeline run	CI/CD Logs, Emission Factors	Python, Jenkins, Green Metrics
SED042	DevOps + Logging	Centralized Log Aggregator with Elasticsearch	Collect and query logs from multiple applications	Log Files	Logstash, Elasticsearch, Kibana
SED043	DevOps + ML	ML Model Deployment with CI/CD	Automate model training, testing, and deployment	Iris / MNIST / Custom Dataset	MLflow, GitHub Actions, Docker
SED044	DevOps + Mobile	CI/CD Insights Dashboard for Mobile Projects	Compare build time, crash reports, test coverage	Android/iOS Logs	Firebase, App Center, Tableau
SED045	DevOps + Notification	Customizable Build Notification Framework	Developers choose how and when to receive build alerts	Jenkins + Teams/Slack Logs	Node.js, Webhooks
SED046	DevOps + Observability	SRE Golden Signals Dashboard Generator	Automate display of latency, traffic, error, saturation	App Performance Logs	Grafana, Prometheus
SED047	DevOps + Supply Chain	Software Bill of Materials (SBOM) Tracker	Trace software dependencies for security/compliance	Package Metadata	CycloneDX, Syft, Trivy
SED048	DevOps + Testing	Test Case Management System	Track, run, and report test executions	Sample QA Data	Django, PostgreSQL
SED049	DevOps + XR	VR DevOps Pipeline Simulator for Training	Interactive learning experience of DevOps stages	VR Simulated Environment	Unity3D, Python, VR SDK
SED050	DevOps Cost Optimization	Cloud Billing Analyzer with Cost-saving Tips	Break down usage and recommend cost reductions	AWS Cost Reports	Python, Boto3, AWS Cost Explorer
SED051	DevOps Feedback Loop	Post-Deployment Feedback Collector	Gather live user feedback immediately after new releases	App Feedback Logs	Python, Flask, Firebase
SED052	DevOps for DB	Version Control System for Database Schemas	Track DB schema changes like source code	Sample DB Migrations	Liquibase, Git, MySQL/Postgres
SED053	DevOps Learning	Gamified DevOps Learning Platform	Create interactive DevOps tutorials with scoring	User Activity Logs	Flask, SQLite, Bootstrap
SED054		Interactive Terminal for Learning Git & DevOps	Guided CLI simulator for beginners	Predefined Scripts	Python, curses, SQLite
SED055	DevOps Maturity	Team DevOps Maturity Model Assessment Tool	Evaluate team adoption across CI/CD, testing, automation	Survey Inputs	MERN Stack, Radar Chart
SED056	DevOps Monitoring	Real-Time Performance Dashboard	Monitor CPU, memory, and request metrics	System Logs	Grafana, Prometheus, Node
SED057	DevOps on Edge Devices	CI/CD Pipeline for Raspberry Pi App Deployment	Auto-deploy to edge (e.g., RPi) on version updates	IoT App Source Code	GitHub Actions, scp, shell scripts
SED058	DevOps on IoT	CI/CD for IoT Firmware Updates	Build, test and deploy firmware to edge devices	Simulated Sensor Code	GitHub Actions, Arduino OTA
SED059	DevOps Performance	Time to Restore (TTR) and Mean Time to Failure (MTTF)	Visualize availability, outages, and fixes over time	Incident Reports	Python, Chart.js
SED060	DevOps Reporting	Daily Standup Generator via Git Data	Generate standup summaries from commits and issues	Git Logs	Python, GitHub API
SED061	DevOps Scripting	Custom CLI Tool for DevOps Automation	Build command-line tool to simplify deployments	Local Scripts	Python, Click
SED062	DevOps Simulation	DevOps Lifecycle Simulator	Simulate the entire SDLC from commit to deployment	Simulated Projects	Docker, Jenkins, Git
SED063	DevOps Toolchain	Custom Dashboard for DevOps Tool Integration	Unified view of tools like Git, Jenkins, Docker, etc.	API Logs	React.js, REST APIs
SED064	DevSecOps	Security Test Automation Pipeline	Integrate security checks into CI/CD pipeline	Sample Flask App	SonarQube, OWASP ZAP, Jenkins
SED065	DevSecOps	Secret Leak Scanner in Code Repositories	Detect accidental exposure of keys and passwords	Public GitHub Repos	GitLeaks, Regex, Python
SED066	FinOps	Cost-aware DevOps Pipelines for Multi-cloud	Track and optimize cloud cost per commit	Billing Logs	Infracost, Terraform, GCP/AWS
SED067	Infra as Code (IaC)	Multi-Cloud Infra Provisioning using Terraform	Provision infrastructure on AWS + Azure	IaC Config Files	Terraform, AWS, Azure CLI
SED068	Infrastructure Testing	Chaos Testing of Cloud Infrastructure	Simulate zone outages, disk failure scenarios	Terraform Infra Setup	Gremlin, AWS Fault Injection
SED069	InnerSource Practices	GitHub Repo Health Scorecard	Analyze code activity, issues, contributors	GitHub Repositories	GitHub API, D3.js, Python
SED070		Contribution Heatmap for Internal Repositories	Visualize collaboration within an organization	GitLab / GitHub Logs	GitHub GraphQL API, Python
SED071		ML in DevOps	Pipeline Failure Root Cause Analyzer using ML	Jenkins Logs	Scikit-learn, NLTK, Pandas

SED072	Observability	End-to-End Tracing System	Visualize request flow across services	Simulated Microservices	OpenTelemetry, Jaeger, Grafana
SED073		Unified Logs + Metrics + Traces Collector	Combine all observability signals into one dashboard	App Logs, Metrics, Traces	Fluent Bit, Grafana, Tempo
SED074	Performance Testing	Load Testing on Web App with JMeter	Measure app performance under simulated load	Sample Web Portal	Apache JMeter
SED075	Platform Engineering	Developer Portal with Self-Service Infra	Let developers launch their infra/app pipelines	Templates, API Integrations	Backstage.io, Kubernetes,
SED076		Kubernetes Developer Portal with Self-Service GitOps	Developers can launch/update services with Git PRs	Git Repos, Helm Charts	Backstage, ArgoCD, GitHub API
SED077	QA Automation	REST API Testing Automation	Validate all API endpoints with assertions	Swagger API Docs	Postman, Newman, CI Tool
SED078	Release Automation	Multi-environment Release Pipeline	Automate dev → QA → staging → production flow	CI/CD Pipeline Logs	GitLab CI/CD, Docker
SED079	Release Engineering	Semantic Versioning Automation Bot	Auto-tag and version releases based on commit messages	Git Logs	Semantic Release, GitHub Actions
SED080	Release Management	Release Notes Generator from GitHub Commits	Create readable release notes from commit history	Git Logs	GitHub API, Python, Markdown
SED081	Secure DevOps	Static & Dynamic Security Scan in CI/CD	Secure code with SAST + DAST integration	Sample Web App	SonarQube, OWASP ZAP, Jenkins
SED082	Serverless DevOps	Multi-Cloud Serverless Deployment Framework	One-click deploy to AWS Lambda, Azure Functions, GCP	Serverless Apps	Serverless Framework, Terraform
SED083	Site Reliability Engg	SLO/SLA Tracker and Alert Generator	Track uptime, latency against set objectives	Incident Data	Prometheus, Grafana, AlertManager
SED084	Software Analytics	Feature Usage Tracker in SaaS App	Log and analyze usage of various features	SaaS App Logs	Mixpanel, Google Analytics,
SED085	Software Architecture	Comparative Study: Monolith vs Microservices	Build both systems and compare latency, scalability	Sample App Modules	Spring Boot, Flask, Docker
SED086	Software Audit	Code Change Audit Dashboard	Show who changed what, when, and why	Git Commit Logs	Python, Git APIs
SED087	Software Deployment	Blue-Green Deployment Simulator	Simulate zero-downtime app release	Sample Web App	Nginx, Docker Compose
SED088	Software Documentation	Automated Documentation Site Generator	Create static documentation site from markdown	Markdown Docs	MkDocs, GitHub Pages
SED089	Software Engineering	Software Requirements Specification (SRS) Tool	Generate SRS from project idea inputs	Project Description Samples	Python, NLP Toolkit, Flask
SED090		Custom SDLC Designer Platform	Let users select/customize their project lifecycle models	SDLC Templates	MERN Stack, JSON Designer
SED091	Software Maintenance	Refactoring History Analyzer	Analyze long-term evolution of code quality	Git Repo History	GitMiner, Python, D3.js
SED092	Software Modeling	UML Diagram Generator from Source Code	Auto-generate class diagrams from code	Java/Python Source Files	PlantUML, Java Parser
SED093	Software Process Mining	Discover DevOps Process Bottlenecks	Mine real log data to visualize DevOps cycle duration	CI/CD Logs, Git Logs	Disco, PM4Py, Python
SED094	Software Refactoring	Legacy Code Refactor Suggestion Tool	Detect complex code and suggest refactoring	Legacy Java Project	PMD, JavaParser, Python
SED095	Software Reuse	Component Reusability Index Generator	Analyze and score modules for reuse potential	Java/Node.js Projects	Custom Script, Graphviz
SED096	Test Automation	Selenium-based Web App Testing Framework	Automate functional and regression tests	Sample Web App	Selenium, TestNG, Maven
SED097	Testing + ML	Smart Test Case Prioritization using Past Failures	Rank test cases using ML to run high-risk ones first	Test Run History	MLlib, Python
SED098	TestOps	Test Result Dashboard with Jenkins Integration	Aggregate and visualize test results from Jenkins builds	JUnit/TestNG Reports	Jenkins, ELK, React
SED099	TestOps + Visualization	Test Coverage Heatmap for CI Pipelines	Show which modules are well-tested in graphical view	Coverage Reports	Istanbul/coverage.py, React
SED100	Version Control	Git-based Project Management Portal	Visualize commits, branches, and contributions	GitHub APIs	React.js, GitHub API, Node.js

Expected Outcome				
Kanban-powered DevOps				
Rapid UI planning based on agile				
Progress forecasting				
Collaborative agile board				
Realtime agile tracking dashboard				
Project sprint-based issue tracker				
AI-assisted story point suggestions				
Estimation + consensus app				
Sprint progress visualization				
Visual productivity insights				
Triage assistant for issue				
Time-optimized DevOps pipelines				
Accelerated QA test creation				
Reduced manual triage time				
Accelerated API testing and design				
Monitored, secure API access				
Identify failure points				
Seamless versioned deployment				
Continuous delivery for mobile				
End-to-end pipeline for serverless				
Safer deployment practice				
Project complexity index				
Code quality report				
Efficient server provisioning				
Scalable microservices architecture				
Productivity insights & UX				
Inclusive software report				
Smart code review bot				
DevOps alert bot				
Disaster recovery support				
Tamper-proof deployment registry				
Developer-friendly deployment				
Reproducible infrastructure				
Live performance dashboards				
Data integrity assurance				

Auto-generated docs for teams				
Ethical model certification				
Developer productivity booster				
Motivational dashboard				
Version-controlled infra changes				
Eco-efficiency report				
Unified log analysis				
Continuous delivery for ML apps				
Mobile quality dashboard				
Personalized DevOps				
Health summary dashboard				
Transparent software component				
Collaborative QA portal				
Immersive DevOps training tool				
Cloud cost visualization + alerts				
Continuous improvement feedback				
Schema rollback and versioning				
Engaging learning portal				
DevOps training playground				
Diagnostic report & roadmap				
Visual performance analytics				
CI/CD for IoT/edge apps				
Automated firmware update pipeline				
SRE dashboard with availability				
Automated standup reports				
Portable DevOps helper tool				
DevOps training environment				
Unified DevOps portal				
Secure delivery pipeline				
Early secret exposure warning				
Cost reduction insights				
Reusable multi-cloud setup				
Infra reliability validation				
Project engagement visualizations				
Engagement metrics dashboard				
Smarter diagnostics for broken				

Distributed tracing platform				
Full-stack visibility				
Performance benchmarks				
Internal developer platform				
Internal developer platform				
Automated API test results				
Seamless version promotion				
Consistent versioning strategy				
Auto-generated release				
Early vulnerability detection				
Platform-agnostic deployment				
Service-level monitoring dashboard				
Product improvement insights				
Architecture comparison results				
Audit trail for development				
Reduced-risk deployment strategy				
Live documentation site				
Semi-automated SRS document				
SDLC planning and export tool				
Codebase aging insights				
Visual UML document generator				
Cycle time optimization report				
Cleaner, maintainable codebase				
Code reuse scoring dashboard				
Test suite with reports				
Faster and focused test execution				
Test insights dashboard				
Visual code quality metric				
Interactive project history viewer				

Sl. No	Sub-Domain	Project Area	Tentative Title	Dataset	Tools Used
ASH001	AI + Accessibility	Sign Language to Speech Converter for Hearing Impaired	Convert hand gestures into speech using AI	Sign Language Dataset	MediaPipe, OpenCV, Text-to-Speech
ASH002	AI + Bioethics	Bias Detection in Healthcare AI Systems	Identify bias in AI models with gender, age, or race	AI Training Logs	Fairlearn, SHAP, Python
ASH003	AI + Genomics	DNA Sequence Classification using Deep Learning	Predict disease susceptibility from genomic sequences	Human Genome Dataset (NCBI)	BioPython, CNN, RNN
ASH004	AI + Genomics	AI-based Genetic Disorder Identifier from DNA	Classify inherited diseases using genomic features	NCBI Genomic Datasets	BioPython, Deep Learning
ASH005	AI + IoT	Smart Inhaler with AI Usage Analytics	Monitor asthma inhaler usage and alert over/underuse	Simulated Sensor Data	Arduino, Python, ML
ASH006	AI + IoT	Smart Band Alert System for Elderly Patients	Detect abnormal health patterns and alert caregivers	Wearable Sensor Logs	Arduino, Edge ML, Android
ASH007	AI + Prenatal Monitoring	Ultrasound Image Analysis for Fetal Growth	Analyze fetal size and abnormalities in ultrasound scans	Fetal Ultrasound Dataset	OpenCV, CNN, YOLO
ASH008	AI + Rare Disease	Early Detection of Parkinson's from Typing Patterns	Analyze keyboard input latency to predict Parkinson's onset	Keyboard Pattern Dataset	Time Series ML, Flask
ASH009	AI + Rehabilitation	Virtual Mirror for Facial Therapy (Bell's Palsy etc.)	Provide real-time corrective feedback for facial therapy	Face Landmark Dataset	MediaPipe, Dlib, Flask
ASH010	AI + Smart Devices	AI-powered Smart Pill Dispenser	Dispense medication and track intake using AI and sensors	Simulated Schedules + Logs	Arduino, Python, ML Timer Models
ASH011	AI + Speech	Slurred Speech Detection for Stroke Victims	Detect slurred speech from audio inputs	Speech Dataset (Simulated)	Librosa, MFCC, CNN
ASH012	AI + Wearables	Stress and Sleep Quality Detection using Smartwatch Data	Predict sleep quality and stress using movement and vitals	Fitbit/Simulated Dataset	Scikit-learn, Pandas, Mobile SDK
ASH013	AI for Cancer Diagnosis	Breast Cancer Cell Classification	Classify benign vs malignant cells from biopsy data	Wisconsin Breast Cancer Dataset	Scikit-learn, SVM, Python
ASH014	AI for Cardiology	Heart Disease Severity Predictor	Predict heart disease level and recommend lifestyle changes	Cleveland Heart Dataset	ML Classification, Flask, HTML
ASH015	AI for Emergency Care	Real-Time AI-Driven Trauma Severity Assessment	Triage severity from emergency input text/images	Simulated EMS Records	BERT, CNN, FastAPI
ASH016	AI for Eye Tracking	AI-based Eye Movement Analyzer for Autism Diagnosis	Detect behavioral patterns using gaze tracking	Gaze Tracking Dataset	OpenCV, ML, Webcam
ASH017	AI for Pain Management	AI-Driven Pain Diary App	Capture and analyze daily pain scores via text or voice	User Input Dataset	NLP, Mobile App, Firebase
ASH018	AI for Radiology	Fracture Detection in X-rays using Deep Learning	Automatically detect and mark bone fractures	MURA X-ray Dataset	CNN, ResNet, TensorFlow
ASH019	AI for Women's Health	Menstrual Health Pattern Analyzer	Detect irregularities and give alerts	Mobile App Logs (Simulated)	Pandas, LSTM, HealthKit
ASH020	AI in ENT	Voice Tone Analyzer for Vocal Cord Health	Detect strain or inflammation from voice modulations	Audio Datasets of Patients	Pitch Analysis, ML, Python
ASH021	AI in Fitness	Pose Estimation for Exercise Correction	Detect incorrect yoga or gym poses and provide feedback	PoseNet, COCO Dataset	OpenCV, MediaPipe, Python
ASH022	AI in Mental Health	Stress Level Detection from Text and Voice	Analyze voice tone and text to detect emotional stress	Interview Audio/Text Dataset	Emotion NLP, MFCC, Python
ASH023	AI in Neonatology	AI-Based Cry Analysis in Newborns	Classify cry types to detect hunger, pain, discomfort	Baby Cry Audio Dataset	MFCC, RNN, Python
ASH024	AI in Neuroscience	Epileptic Seizure Prediction System	Predict and alert epileptic seizures using EEG signals	UCI Epileptic Seizure Dataset	LSTM, RNN, Keras
ASH025	AI in Obstetrics	Pregnancy Risk Level Prediction using Health Parameters	Predict complications like preeclampsia, gestational diabetes	Prenatal Health Dataset	XGBoost, Python, SHAP
ASH026	AI in Pathology	Blood Cell Image Classifier	Classify WBC, RBC, and detect leukemia	BCCD Dataset	Deep CNN, Image Augmentation
ASH027	AI in Pathology	Urine Strip Test Color Analyzer	Use mobile camera to analyze urine test strip color	Simulated Color Maps	OpenCV, Color Detection Algorithms
ASH028	AI in Pediatrics	Pediatric Growth Chart Analyzer	Track deviations from growth norms in children	WHO Growth Data	Matplotlib, ML, Flask
ASH029	AI in Rehabilitation	Gait Pattern Analyzer for Physio Recovery	Monitor and analyze gait during physiotherapy	Gait Dataset (CMU MoCap)	Pose Estimation, Scikit, Flask
ASH030	AI in Rural Healthcare	Symptom-to-Medicine Recommendation for	Suggest basic treatment with constraints in rural healthcare	Disease-Symptom Dataset	Rule-based ML + AI, Flask
ASH031	AI in Sleep Disorders	Sleep Apnea Detection using Snore Patterns	Analyze snoring to detect obstructive sleep apnea	Audio Snoring Dataset	Audio Classification, Librosa
ASH032	AR/VR in Healthcare	Virtual Reality for Surgical Training	Simulate surgical procedures for medical training	Simulated VR Scenarios	Unity3D, Oculus, C#
ASH033	Biomedical AI	Spirometry Report Classifier for Lung Function	Analyze and categorize lung health from spirometry curves	Spirometry Curve Dataset	SVM, Feature Engineering
ASH034	Biomedical AI	ECG Signal Classification using 1D CNN	Detect patterns of arrhythmia, AFib, and other cardiac anomalies	MIT-BIH ECG Dataset	1D CNN, Keras
ASH035	Chronic Condition AI	Personalized Alert System for COPD Patients	Monitor breathing patterns and predict exacerbation risk	COPD Dataset	LSTM, Signal Processing

ASH036	Clinical Decision Support	AI-based Second Opinion System	Assist doctors in confirming diagnosis from symptoms and records	MIMIC-III, Case Reports	NLP, ML Ensemble, Flask
ASH037	Clinical NLP	Symptom Checker using NLP	Convert user symptom text into probable disease predictions	WebMD/Q&A Data	NLP (BERT), Python, Flask
ASH038	Community Health AI	Disease Outbreak Predictor Based on Symptoms in Area	Analyze local symptoms to detect potential outbreaks	Geo-tagged Health Data	ML + GIS Tools
ASH039	COVID-19 AI	COVID-19 Detection using Cough Sound Analysis	Identify COVID-like patterns from audio	Coswara Dataset	CNN, Librosa, Python
ASH040	Data Privacy in Health AI	Federated Learning for Patient Data Sharing	Train AI models without transferring sensitive data	Simulated Hospital Datasets	PySyft, Federated Averaging
ASH041	Dental AI	AI-Powered Dental Cavity Detection from X-rays	Detect caries and abnormalities in dental images	Dental Image Dataset	CNN, OpenCV, ResNet
ASH042	Dental AI	Tooth Cavity Detection from Intraoral Camera	Detect early-stage cavities from mouth camera images	Dental Image Dataset (Kaggle)	YOLOv5, OpenCV
ASH043	Dermatology AI	Skin Lesion Classification System	Detect melanoma or benign lesion using image classification	ISIC Skin Dataset	CNN, Keras, TensorFlow
ASH044	Diabetic Care AI	AI-based Foot Ulcer Risk Predictor	Predict the risk of diabetic foot ulcers using patient data	DFU Dataset	ML Models, Keras, Python
ASH045	Digital Twin in Health	Virtual Patient Model for Simulation-Based Diagnosis	Simulate a patient based on digital health records	Simulated EMR	Digital Twin AI, Python
ASH046	Disease Prediction	Diabetes Risk Prediction using ML	Predict the likelihood of diabetes based on health parameters	Pima Indians Diabetes Dataset	Scikit-learn, Python
ASH047	Edge + AI	Edge AI System for Emergency Rooms	Deploy AI modules on edge devices for immediate decision-making	Local Hospital Simulation	Nvidia Jetson, Python
ASH048	Elderly Care AI	Daily Activity Recognition using AI	Detect activities (eating, walking, sleeping) using sensors	UCI HAR Dataset	LSTM, Mobile Sensors, Edge AI
ASH049	Health Chatbots + AI	Multilingual Health Chatbot for Rural Areas	Provide healthcare Q&A in regional languages	Indian Health FAQs + Translations	NLP, RASA, Hugging Face Models
ASH050	Health Chatbots + Vision	OCR-based Prescription Reading Assistant	Read doctor prescriptions using camera and voice them out	Handwritten Rx Dataset	Tesseract OCR, Text-to-Speech
ASH051	Health Forecasting	Chronic Disease Progression Forecasting	Predict future condition of patients with diabetes, CKD, etc.	Longitudinal Health Records	Time Series Models, RNN, LSTM
ASH052	Health Informatics	AI-based EHR Anonymization Tool	Mask and generalize patient data to preserve privacy	MIMIC-III Dataset	NLP, Named Entity Recognition
ASH053	Home-based AI	AI-assisted Wound Healing Tracker	Monitor wound progression using mobile camera	Wound Image Dataset	OpenCV, CNN, Mobile App
ASH054	Hospital Operations	AI-powered OP Scheduling Optimization Tool	Reduce waiting time and resource conflicts	Hospital Appointment Logs	Linear Programming, ML
ASH055	ICU Automation	Intelligent ICU Bed Management System	Optimize allocation based on vitals and severity	Simulated Patient Logs	Decision Trees, Web Interface
ASH056	ICU Monitoring	Early Sepsis Prediction Model	Alert ICU for sepsis risk 6 hours in advance	MIMIC-III	LightGBM, Pandas, SHAP
ASH057	Medical Imaging	Chest X-ray Analysis for Pneumonia Detection	Classify X-rays as normal or pneumonia-affected	NIH ChestX-ray Dataset	CNN, Keras, OpenCV
ASH058	Medical Workflow AI	Smart Referral System using AI	Recommend specialists based on symptoms and history	Clinical Referral Dataset	NLP + ML Models
ASH059	Mental Health + AI	Depression Severity Analyzer from Social Media Posts	Detect signs of depression from text patterns	Reddit Mental Health Corpus	BERT, Sentiment Analysis
ASH060	NLP + Medical Chatbots	Multilingual Diagnosis Helper using Voice & Text	Enable multilingual consultation using AI	Q&A Medical Corpus + TTS	RASA, GPT, Voice APIs
ASH061	NLP for Healthcare	Clinical Notes Summarization using AI	Summarize doctor's handwritten/typed notes	MIMIC Notes, Discharge	NLP, T5 Transformer
ASH062	NLP for Healthcare	Discharge Summary ICD Code Recommender	Suggest ICD codes based on hospital summary notes	MIMIC-III Notes	NLP, Transformers, Scikit-learn
ASH063	NLP in Health	Clinical Report Language Simplifier	Translate complex doctor notes into patient-friendly language	MIMIC Notes	GPT Models, Text Simplification
ASH064	Nutrition AI	Calorie Estimator from Food Images	Predict calorie count from uploaded food photo	Food-101 Dataset	CNN, Image Classification
ASH065	Nutrition AI	AI-Powered Glycemic Index Estimator	Predict glycemic index based on food type and portion	Nutrition Dataset (USDA)	Regression Models, Python
ASH066	Oncology AI	Brain Tumor Detection from MRI	Detect tumor region and type from MRI images	BRATS Dataset	CNN, Image Segmentation, Keras
ASH067	Oncology AI + Genomics	Tumor Mutation Burden Estimation for Immunotherapy	Estimate TMB from clinical & genomic data	TCGA Dataset	ML, Survival Analysis
ASH068	Ophthalmology AI	Diabetic Retinopathy Detection from Fundus Images	Classify eye damage due to diabetes	APTOS 2019 Dataset	Deep CNN, OpenCV
ASH069	Ophthalmology AI	Cataract Detection from Eye Lens Images	Classify severity of cataract from camera images	Eye Lens Dataset	YOLOv5, CNN, OpenCV
ASH070	Patient Feedback Analysis	Sentiment Analyzer for Patient Reviews	Analyze hospital/patient reviews for service improvement	Health Review Dataset (NLP)	VADER, BERT, Python
ASH071	Personalized Alerting	AI-based Smart Alarm System for Medication Reminders	Customize medication alerts based on activity, mood, and schedule	Daily Routine Dataset	Mobile ML, Android SDK

ASH072	Personalized Health	AI-Based Diet Recommendation System	Suggest daily diet based on BMI, preferences, and conditions	Simulated Health Profile Dataset	Flask, ML, Recommendation Engine
ASH073	Personalized Medicine	Drug Recommendation System using ML	Suggest medication based on patient's age, allergy, and history	MIMIC-III (Hospital Data)	Pandas, Scikit-learn
ASH074	Personalized Medicine	Adaptive Drug Dosage Recommender	Adjust dosages based on patient feedback and vitals	Drug Dosage Logs	Reinforcement Learning, Flask
ASH075	Post-Surgery AI	Pain Level Estimation from Face and Speech	Estimate pain index from non-verbal cues post-operation	Pain Expression Dataset	DeepFace, Audio Analysis
ASH076	Prenatal AI	Fetal Health Classification Using CTG Data	Predict fetal stress or risk from cardiotocography signals	UCI CTG Dataset	SVM, Decision Tree, Scikit-learn
ASH077	Radiology + AI	Lung Cancer Detection in CT Scans	Classify nodules as benign or malignant	LIDC-IDRI Dataset	CNN, 3D Image Processing
ASH078	Rehabilitation & AI	Muscle Movement Classifier for Paralyzed Patients	Use EMG data to recognize voluntary movements	EMG Sensor Dataset	ML Models, Arduino, Edge ML
ASH079	Remote Health Monitoring	Blood Pressure Estimator from Smartphone Camera	Estimate BP using PPG and video frames	PPG Dataset	OpenCV, ML, Android App
ASH080	Remote Monitoring	Real-Time Oxygen Saturation Monitoring via Smartphone	Use camera and AI to estimate SpO2 from fingertip video	Simulated Pulse Video Dataset	OpenCV, ML, Android
ASH081	Remote Monitoring	Voice Biometrics for Patient Monitoring	Identify stress, fatigue, or abnormal speech in chronic patients	Custom Voice Dataset	MFCC, TensorFlow, Keras
ASH082	Respiratory Health	AI for Cough Type Classification (Dry/Wet/Barking)	Classify types of cough to identify respiratory issues	Coswara or Simulated Dataset	MFCC, CNN, Librosa
ASH083	Sleep Science + AI	Sleep Stage Classification from EEG Data	Classify stages of sleep for sleep apnea patients	Sleep-EDF Dataset	LSTM, Keras, EEG Preprocessing
ASH084	Smart Ambulance	AI-Powered Emergency Response Route Optimization	Suggest fastest routes and triage cases in ambulances	OpenStreetMap + Incident Logs	Dijkstra Algo, Flask API
ASH085	Smart Elderly Care	Fall Detection System Using AI + Sensors	Detect and alert caregivers of falls in elderly patients	Real-time Sensor Simulation	OpenCV, Accelerometer, Edge ML
ASH086	Smart Eye Care	AI Vision Assistant for Colorblind Patients	Detect and name colors for colorblind users	Simulated Color Dataset	Color Detection, Android App
ASH087	Smart Home + AI	AI-based Patient Position Monitoring in Smart Beds	Detect bed exit/falls in ICU/home settings	Camera + Pressure Mat Dataset	OpenCV, YOLO, Arduino
ASH088	Smart Home for Health	Fall Prediction System Using Gait and Room Sensors	Predict fall risk before it occurs using motion analysis	Smart Home Sensor Dataset	Time Series + ML, Edge AI
ASH089	Smart Hospital System	AI Queue Management for Hospitals	Predict wait times and prioritize emergency cases	Simulated Hospital Logs	Flask, ML Model, SQLite
ASH090	Smart Pharmacy	Medicine Expiry Detector from Strip Image	Alert users if medicine is expired using strip image OCR	Simulated Medicine Strip Dataset	Tesseract OCR, Mobile App SDK
ASH091	Smart Rehabilitation	AI-based Speech Therapy Assistant	Help stroke patients recover speech using feedback loops	Audio Therapy Sessions	NLP, TTS, Audio Feedback Loops
ASH092	Smart Wearable + AI	Sweat Analysis for Hydration & Electrolyte Balance	Predict dehydration using sweat sensor data	Simulated Sensor Data	Edge ML, Arduino, Mobile App
ASH093	Sustainability in Health AI	Green AI Pipeline for Medical Image Processing	Reduce training cost of AI for medical imaging	Chest X-ray / CT Dataset	Quantized Models, Pruning, ONNX
ASH094	Tele-ICU Monitoring	Multi-patient AI Dashboard with Vital Prioritization	Rank patients in ICU based on criticality using AI	Vital Signs Dataset	Dash, Scikit-learn, Pandas
ASH095	Telemedicine	AI-Powered Virtual Health Assistant	Real-time remote triage and recommendations	Simulated Interaction Data	Dialogflow, ML, Firebase
ASH096	Voice & NLP	AI Assistant for Visually Impaired Patients	Assist users with voice-driven medication reminders and	Drug Label Dataset + TTS	NLP, Text-to-Speech, Android SDK
ASH097	Wearable + Predictive AI	Epileptic Seizure Warning Watch	Alert user and family before seizure onset	EEG Wearable Dataset	LSTM, Android SDK
ASH098	Wearable Devices + AI	Heart Rate Abnormality Detection using Wearable Data	Identify anomalies like arrhythmia in real-time	MIT-BIH Arrhythmia Dataset	TensorFlow, Edge ML
ASH099	Wearables + AI	Posture Detection and Correction System	Detect incorrect back/neck posture and alert user	Wearable Accelerometer Dataset	Edge ML, Mobile App

Expected Outcome
Real-time communication tool
Ethical AI model dashboard
Predictive genetic diagnostics
Early prediction of rare diseases
IoT-based smart medication device
Real-time elderly monitoring system
Automated fetal health monitoring
Digital motor health screening
Smart visual aid for neuro recovery
Medication compliance assistant
Early stroke detection support
Mental wellness assistant
Cell-based cancer risk assessment
Personalized heart care planner
Smart emergency prioritization
Assistive behavioral diagnosis
Personalized chronic pain tracking
Visual decision support for radiologists
Personalized health cycle tracking
Preventive vocal strain analysis
Real-time fitness assistant
Early intervention for stress
Neonatal care support tool
Early alert system for seizure-prone
Alert system for OB/GYN monitoring
Visual diagnostic aid for pathology labs
AI-powered mobile lab
Early warning for developmental delays
Smart physiotherapy feedback
Semi-automated rural diagnosis system
Low-cost OSA screening
Immersive surgical practice platform
Pulmonary disorder identification
Real-time cardiac monitoring
Early intervention and alert system

Clinical recommendation assistant
Chatbot for preliminary health check
Early disease outbreak alert
Remote non-invasive screening
Secure decentralized model training
Automated dental diagnostics
Preventive oral care tool
Skin cancer screening support
Preventive care tool for diabetic patients
Clinical training and testing environment
Early risk analysis and suggestions
Offline emergency triage
Personalized elderly behavior monitoring
Inclusive AI support for remote regions
Voice-guided medication interpreter
Predictive patient monitoring
GDPR-compliant data processing
At-home wound recovery assistant
Efficient scheduling system
Automated bed management assistant
Reduced mortality through early
AI-powered diagnostic support
Efficient inter-department routing
Screening tool for psychological wellness
Inclusive digital healthcare assistant
Faster documentation for doctors
Automated diagnosis coding
Improved patient comprehension
Personalized diet planner
Personalized diet assistant
Early tumor screening aid
Personalized cancer treatment optimization
Diabetic eye complication prevention
AI eye screening solution
Hospital quality improvement insights
Intelligent patient-friendly alerting

AI-driven nutrition planner
Personalized treatment assistant
AI model for dose optimization
Smart post-operative monitoring
OB/GYN alerting system
AI screening assistant for radiologists
Smart wearable controller
Contactless BP monitoring
Contactless vitals monitoring
Passive health tracking from speech
Early detection of asthma, flu, or
Sleep pattern analysis
Life-saving ambulance routing
Smart home care system
Visual accessibility tool
Fall prevention system
Pre-emptive injury prevention
Efficient patient flow management
Expiry-aware smart medicine box
At-home speech therapy trainer
Real-time dehydration alert
Environment-friendly AI inference system
ICU monitoring interface
24/7 remote consultation system
Accessibility solution
Life-saving wearable system
Alert system for cardiac patients
Injury prevention & ergonomic guidance

Sl. No	Sub-Domain	Project Area	Tentative Title	Dataset
AAN001	Affective Computing	Real-Time Stress Detection using Multimodal Signals	Combine EEG, HR, and EDA to detect stress	WESAD or MAHNOB Dataset
AAN002	AI & Brain Lateralization	Hemispheric Dominance Estimation via Cognitive EEG Tasks	Estimate which hemisphere is dominant during task-specific activities	Task EEG Dataset
AAN003	AI + Brain Simulation	Simulate Simple Brain Circuits for Learning Tasks	Use AI to simulate small cortical circuits like visual cortex	Computational Neuron Models
AAN004	AI + Consciousness Research	Dream Content Classification from EEG and Visual Imagery	Classify dream state or content from sleep brainwaves	DREAMER Dataset or Sleep EEG
AAN005	AI + Neuroimaging	White Matter Abnormality Detection from MRI	Detect white matter lesions in MS or trauma patients	WMH Dataset or ADNI
AAN006	AI + Psychiatric Disorders	Depression Level Classifier from EEG	Analyze frontal alpha asymmetry to predict depression severity	Depression EEG Dataset
AAN007	AI and Language Disorders	Aphasia Type Detection via Speech and Brain Signals	Classify types of speech impairment due to stroke or trauma	Audio + EEG Dataset
AAN008	AI and Neural Rehabilitation	Motor Recovery Tracker Post-Stroke using EEG & Movement	Measure motor skill improvement during therapy	EEG + IMU Dataset
AAN009	AI for Autism	Eye Tracking and EEG Analysis for Autism Screening	Identify early autistic traits from combined visual and neural cues	Gaze + EEG Dataset
AAN010	AI for Brain Aging	Predict Brain Age from MRI using Deep Learning	Compare predicted brain age with actual to detect early aging	UK Biobank / OASIS MRI Dataset
AAN011	AI for Brain Growth Monitoring	Pediatric Brain Volume Estimation from MRI	Estimate brain growth vs age curve in children	Pediatric MRI Dataset
AAN012	AI for Brain-Led Social Robotics	Empathy-Driven Robot Using Human EEG Reactions	Adapt robot actions to user's emotional and cognitive states	EEG + Robot Dataset
AAN013	AI for Cognitive Mapping	Visualize Concept Networks from Thought Patterns	Build semantic maps from mental state transitions	EEG + Word Association Logs
AAN014	AI for Cognitive Therapy	VR + AI Guided Cognitive Behavioral Therapy	Use EEG to tailor CBT sessions in immersive VR	EEG + Therapy Session Logs
AAN015	AI for Consciousness Detection	AI-Based Classification of Conscious vs. Unconscious States	Detect minimally conscious states using fMRI or EEG	EEG Consciousness Dataset
AAN016	AI for Language Disorders	Stuttering Severity Classification from EEG + Audio	Detect stuttering and track improvement via neural monitoring	Speech + EEG Dataset
AAN017	AI for Language Learning	Brain-Driven Feedback Loop for Language Acquisition	Use EEG to give feedback on pronunciation and focus	EEG + Audio Dataset
AAN018	AI for Mind Wandering	Classifying Mind Wandering vs. Focused Attention via EEG	Detect attention drift during learning	Simulated Focus Dataset
AAN019	AI for Neuro-Linguistics	Word Association Mapping from Brain Activity	Match words with neural activations from fMRI	fMRI Semantic Dataset
AAN020	AI for Synesthesia Simulation	Color-Sound Mapping using AI to Simulate Synesthesia	Emulate sensory crossover effect using brain-inspired learning	Custom Dataset
AAN021	AI in Dyslexia Detection	Dyslexia Screening via Eye Movements and Brain Signals	Detect reading disorders in children using brain and eye data	Simulated or Real Dataset
AAN022	AI-Driven Neuromodulation	Predict TMS Parameters for Depression Treatment	Suggest transcranial magnetic stimulation patterns	Clinical TMS Response Dataset
AAN023	AI-Enhanced Brain Simulation	Cortical Microcircuit Simulator Using AI	Use AI to simulate neuron clusters in visual cortex	Neuromorphic Data
AAN024	Bioelectrical AI	AI-Driven Analysis of Somatosensory Evoked Potentials	Analyze SEPs to assess spinal cord and nerve integrity	SEP Waveform Dataset
AAN025	Brain Data Privacy AI	Differential Privacy for Brain Signal Classification	Train AI models on EEG without compromising privacy	Simulated EEG Dataset
AAN026	Brain Injury AI	Detection of Concussion Risk from Impact + EEG Data	Correlate head impact with EEG anomalies to detect concussions	Simulated Helmet Sensor + EEG
AAN027	Brain Literacy Aid	AI Tool to Identify Reading Disorders via Brain Imaging	Use fMRI or EEG to classify types of dyslexia	fMRI Reading Dataset
AAN028	Brain Morphometry	Cortical Thickness Estimator from MRI using AI	Segment and measure cortical thickness for neurodevelopment research	OASIS, Freesurfer Dataset
AAN029	Brain Network Modeling	Functional Brain Network Graph Classification	Use graph neural networks on EEG connectivity graphs	EEG Connectivity Dataset
AAN030	Brain Signal Processing	EEG-based Emotion Detection using Deep Learning	Detect emotional states (happy, sad, neutral, etc.) from EEG signals	DEAP, SEED, or DREAMER
AAN031	Brain Simulation	Simulating Simple Neuron Firing Models using AI	Model and visualize neural action potentials and synaptic behaviors	Hodgkin-Huxley/Simulations
AAN032	Brain State Estimation	Predicting Attention Shift Onset using EEG	Detect micro-shifts in attention before they occur	EEG Microstate Dataset
AAN033	Brain-AI Communication	Brain-to-Text Generation using EEG and NLP	Translate thoughts into written text using trained EEG-to-word model	Imagined Speech EEG Dataset
AAN034	Brain-AI Habit Mapping	Behavioral Habit Tracker via Brainwave Response	Use neural patterns to monitor habit formation	EEG + Routine Log Dataset
AAN035	Brain-Aware AI Games	Adaptive Game Difficulty using EEG-based Attention Feedback	Adjust game difficulty based on user's brain engagement	EEG + Game Logs

AAN036	Brain-Computer Interaction	Cursor Control using EEG and AI	Control cursor movements using EEG patterns	OpenBCI EEG Logs
AAN037	Brain-Computer Interface	Motor Imagery Classification for BCI	Enable control of devices using imagined hand/foot movements	BCI Competition IV Dataset
AAN038	Brain-Computer Music Interface	Compose Music from Brain Signals	Use EEG features to compose ambient music based on mood	EEG + Music Signal Logs
AAN039	Brain-Driven Game AI	Train a Game Agent using Brain State Reward Signals	Reinforce AI agents based on player brain reactions	EEG + Game Data
AAN040	Brain-Inspired AI	Spiking Neural Networks for Pattern Recognition	Implement AI models inspired by real neuron firing behavior	Custom Input Data
AAN041	Brain-Inspired Memory Models	Episodic Memory Storage Simulation using Deep Reinforcement	Mimic how the brain stores episodic events using AI agents	Virtual Environment Logs
AAN042	Brain-Robot Co-learning	Adaptive Robot Learner Using Human Neural Feedback	Reinforce robot behavior based on user EEG feedback	EEG + Robot Action Logs
AAN043	Brain-Social Media AI	Sentiment-AI for Social Media Based on Real-Time Brain Signals	Provide sentiment moderation with neural confirmation	EEG + Social Text Dataset
AAN044	Brainwave Biometrics	Personal Identification from EEG	Use unique EEG patterns as a biometric signature	PhysioNet EEG Biometric Dataset
AAN045	Brainwave Synchronization	Brain-to-Brain Interface Prototype using SSVEP	Send simple signals from one brain to another	SSVEP Dataset
AAN046	Cognitive Impairment	Early Alzheimer's Detection from MRI + Cognitive Test Data	Detect mild cognitive impairment using structural MRI	ADNI Dataset
AAN047	Cognitive Neuroscience + AI	Cognitive Load Detection using EEG	Predict mental workload using brainwave patterns	Mental Workload EEG Dataset
AAN048	Consciousness Studies	Brain Activity Classification in Wake vs Sleep vs Anesthesia	Detect consciousness levels using EEG/fMRI	PhysioNet Sleep or Custom Dataset
AAN049	Cross-Cultural Brain AI	Compare Brain Reaction to Images Across Cultures	Explore neural diversity in perception across demographics	EEG Image Reaction Dataset
AAN050	Cross-Modal AI + Brain	Audio-Visual Synchrony Detection Using EEG	Detect synchronized audio-visual stimuli response using brain activity	Multisensory EEG Dataset
AAN051	Dream Analysis	Dream Phase Classification from Polysomnographic Signals	Identify REM, NREM, lucid dreaming phases from EEG	Sleep-EDF Dataset
AAN052	Emotion-AI in Clinical Psychology	Classifying PTSD Severity from Resting-State EEG	Identify neural markers of trauma and stress	PTSD EEG Dataset
AAN053	Emotion-Aware AI Assistant	Conversational AI Adapted to User's Brain-Based Emotion	Modify chatbot response based on user's real-time brain activity	EEG + Chat Logs
AAN054	Human-AI Cognitive Sync	Real-Time AI Avatar Response to Brain-State Changes	Build avatars that emotionally sync to user's brain activity	DEAP or SEED EEG Dataset
AAN055	Human-Robot Neural Collaboration	EEG-Controlled Robot Assistant with Feedback	Build a robot assistant that adapts to user's brain commands and stress	EEG + Robot Response Dataset
AAN056	Language & Brain	Language Comprehension Prediction from fMRI	Predict semantic understanding levels from brain activity	fMRI Language Task Dataset
AAN057	Memory Enhancement	AI-based Feedback Loop for Short-Term Memory Training	Boost working memory via neurofeedback and gamification	Simulated Cognitive Data
AAN058	Memory Recall Simulation	Predicting Recollection Strength using EEG	Detect likelihood of memory recall from EEG signal shape	Recall Task Dataset
AAN059	Memory Research	Working Memory Capacity Estimation from EEG	Analyze theta and alpha wave ratios to estimate WM load	EEG Memory Task Dataset
AAN060	Mental Imagery Classification	Predict Mental Visualization Type (Visual, Auditory, Kinesthetic)	Classify dominant mental imagery modality via EEG patterns	VAK EEG Dataset (Simulated)
AAN061	Mirror Neuron Simulation	AI Modeling of Mirror Neuron Behavior for Action Recognition	Simulate empathy and action imitation using AI	Motion + Brain Response Dataset
AAN062	Motor Control	Hand Movement Reconstruction from EEG	Decode 2D hand movement trajectory from EEG	NMED-HAND, OpenBMI
AAN063	Multisensory Neuro-AI	AI for Synchrony in Audio-Visual Brain Processing	Study brain response to multisensory input	Multimodal EEG/fMRI
AAN064	Music & Neuroscience	Brainwave-Based Music Genre Recommender	Recommend music based on user's real-time brain state	EEG + Music Dataset
AAN065	Music Perception AI	Real-Time Brain-Guided Playlist Generator	Recommend songs based on real-time mood detection	EEG + Music Dataset
AAN066	Neural Art Intelligence	EEG-Based Neural Style Transfer in Digital Art	Create art styles based on emotional brainwave signatures	EEG + Art Style Dataset
AAN067	Neural Decoding	Visual Image Reconstruction from fMRI	Reconstruct images seen by the brain using AI	fMRI Image Data
AAN068	Neural Empathy Measurement	EEG Analysis for Empathy Response to Visual Stimuli	Measure empathetic response in social scenarios	Affective EEG Dataset
AAN069	Neural Style Learning	Personalized Study Pattern Recommender via EEG	Recommend learning strategies based on brain feedback	EEG + Learning Log Dataset
AAN070	Neural Time Perception	Model Time Estimation Ability from Brain Signals	Predict how people perceive time during tasks	Time Perception EEG Dataset
AAN071	Neuro-AI Creativity Modeling	AI Model to Predict Divergent Thinking Ability	Predict creativity scores from brain connectivity patterns	fMRI + Cognitive Score Dataset

AAN072	Neuro-AI Ethics Simulator	Role-Play Simulator to Teach Neuro-AI Ethics	Create decision-making simulator for ethical dilemmas in brain-AI fusion	Case-Based Simulation
AAN073	Neuro-AI Explainability	Interpretable AI for Brain Signal Classification	Visualize attention maps of deep learning models for EEG/fMRI	DEAP or OpenBMI Dataset
AAN074	Neuro-AI for Anxiety Detection	Predict Anxiety Levels using Multimodal Inputs	Detect anxiety through EEG, HRV, and facial expression	WESAD / Self-logged Dataset
AAN075	Neuro-Biometrics	Cognitive Signature for Fraud Detection	Use brain responses to identify intention/fraud in security processes	ERP or Concealed Info EEG Dataset
AAN076	Neurocognitive VR	Adaptive VR Therapy based on Brain Feedback	Use EEG to modulate VR scenes during therapy	EEG + VR Environment Logs
AAN077	Neurodegeneration Detection	Parkinson's Tremor Detection via Accelerometer + EEG	Combine wearable sensors and brain signals for tremor tracking	Daphnet or Custom Dataset
AAN078	Neuroeconomics	Risk-Taking Behavior Analysis using EEG	Identify neural signatures of risky vs. cautious decisions	EEG Financial Decision Dataset
AAN079	Neuro-Edge AI	Edge AI Device for EEG Signal Classification	Deploy real-time brainwave classifier on edge hardware	BCI Competition Dataset
AAN080	Neuroergonomics	AI for Cognitive Fatigue Monitoring in Drivers	Monitor mental workload and alert fatigue in real time	Simulated Driving EEG Dataset
AAN081	Neuroethical AI	Bias & Fairness Audit in Neuro-AI Systems	Detect discrimination in brain-related AI systems	EEG + Demographic Logs
AAN082	Neuroethics + AI	Bias Analysis in AI Neuroscience Models	Evaluate model bias in brain-based prediction systems	Model Logs + Demographic Data
AAN083	Neurofeedback	EEG-based Attention Enhancement using Reinforcement	Train users to stay focused via AI-based neurofeedback	Simulated Focus Dataset
AAN084	Neurofeedback for ADHD	Closed-Loop Attention Enhancer for ADHD Children	Give real-time visual feedback to improve focus	ADHD EEG Dataset
AAN085	Neuro-Gaming	Brainwave-Based Game Control System	Control game mechanics with EEG signals	Unity Game + EEG Input
AAN086	Neuro-Inclusive Interfaces	Emotion-Aware UI Design for Users with Autism	Adapt digital interfaces based on real-time emotional feedback	EEG + Emotion Dataset
AAN087	Neuro-Linguistics + AI	Mapping Phoneme Recognition to fMRI Activity	Link speech recognition with brain region activation	fMRI Phoneme Dataset
AAN088	Neurological Disorders	Epileptic Seizure Prediction using EEG	Predict seizures before onset using brain signals	CHB-MIT Scalp EEG Dataset
AAN089	Neuromarketing	Consumer Emotion Tracking during Ad Viewing	Analyze viewer's attention and emotion using EEG while watching ads	EEG Ad Reaction Dataset
AAN090	Neurophilosophy + AI	Modeling the "Sense of Self" Using Neural State Classification	Explore how AI can classify neural patterns associated with	Meditative EEG Dataset
AAN091	Neuroplasticity Research	AI Tool for Tracking Brain Recovery Post-Stroke	Monitor change in neural pathways using MRI over time	Longitudinal Stroke MRI Dataset
AAN092	Neuropsychology & AI	Executive Function Assessment using Brain Data	Evaluate planning, decision-making skills using neural data	Task-based EEG Dataset
AAN093	Neuro-Robotics	AI-Controlled Robotic Arm using Motor Imagery EEG	Move a robotic arm based on imagined hand movement	BCI Competition Dataset IV
AAN094	Neuro-Symbolic AI	Hybrid Neural-Symbolic System for Memory Encoding	Combine symbolic reasoning with AI to model episodic memory	Cognitive Simulation Logs
AAN095	Sensory Substitution	Tactile Brain-Computer Interface	Use touch-based feedback to control or communicate via BCI	Custom Haptic + EEG Dataset
AAN096	Sleep Neuroscience	Sleep Stage Classification from Polysomnography	Automatically label sleep stages from EEG and EOG signals	Sleep-EDF Expanded Dataset
AAN097	Virtual Brain Twin	Predict Future Brain Activity from Current State using AI	Forecast upcoming mental states based on brain history	EEG Time Series Dataset
AAN098	Virtual Mind State Trainer	Biofeedback-based Attention Trainer Using AI	Create attention training program via real-time biofeedback	EEG + HR Dataset
AAN099	Virtual Neuroanatomy	AI-Based Brain Atlas Generator from MRI	Build 3D models of brain regions from imaging	MRI Brain Scans (ADNI)
AAN100	Visual Neuroscience	Visual Attention Mapping using AI	Analyze focus regions from EEG during visual tasks	EEG + Eye-tracking Dataset

Tools Used	Expected Outcome
Multimodal Fusion Models, Python	Stress-aware wearable system
EEG Feature Ratios, Python	Educational cognitive lateralization tool
Brian2, NEST, Python	Research-grade brain simulation
LSTM, CNN, Python	Experimental dream-state classifier
3D U-Net, ITK-SNAP, Python	Early neuro-disorder screening
Feature Engineering, XGBoost	Mental health screening support
NLP + EEG Fusion	AI-driven speech therapy aid
LSTM, Cross-modal AI	Smart neuro-rehab assistant
Multimodal Fusion, Python	Non-invasive autism diagnosis
CNN, MRI Normalization	Biomarker for early Alzheimer's or dementia
3D CNN, Volumetric Analysis	Early neurodevelopment assessment
ROS, Emotion Classifier	Emotionally aware companion robot
NLP + EEG ML	Mind-map generator from brainwaves
VR Toolkit, AI Chatbot	Next-gen CBT support tool
CNN, SHAP, MNE	Diagnostic tool for coma/MCS patients
Speech ML + EEG Fusion	Clinical support for speech therapy
Speech AI, RL, Python	Smart language trainer
LSTM, Signal Analysis, MNE	Adaptive e-learning platforms
NLP, fMRI Decoding	Neural lexicon visualization
GANs, Mapping Networks	Neurosensory educational tool
Eye Tracker + EEG + ML	Early reading disorder detector
XGBoost, SHAP	Personalized neurotherapy plan
NEST, Deep Learning	Synthetic cortical modeling toolkit
Signal Processing, SVM	Non-invasive nerve function assessment
DP-SGD, Opacus, PyTorch	Privacy-preserving BCI system
Sensor Fusion, RNN	Smart concussion detection helmet
CNN, MRI Toolkits	Neurodiagnostic reading assistant
U-Net, Deep Learning	AI-based brain anatomy mapping
GNN, NetworkX, PyTorch	Neurological condition classifier
CNN, LSTM, Python, MNE, Keras	Emotion-aware adaptive interfaces
Python, NEURON Simulator	Educational neural modeling tool
LSTM, Attention Models	Pre-emptive alert system
LSTM, Transformers, BCI Toolkits	Prototype for silent communication
Habit Learning Model	Neuroscience-informed personal tracker
EEGNet, Unity3D	AI tutor for neurogaming

CSP, LDA, Keras	Hands-free HCI interface for disabled users
CSP, LDA, CNN	Hands-free control system for assistive tech
ML + MIDI Generator	Neuro-sensory music generation
RL, Feedback Loop	Emotion-adaptive AI opponent
NEST Simulator, BindsNET	Energy-efficient neuromorphic system
DQN, Memory-Augmented Networks	Neuromorphic AI memory system
RL + EEG, ROS	Brain-supervised co-learning robot
NLP + EEG Fusion	Neuro-regulated feedback system
SVM, CNN	Brain-based authentication system
BCI + Signal Relaying	Experimental brain sync demo
3D CNN, Logistic Regression	Early dementia screening tool
Scikit-learn, MNE, SVM	Real-time fatigue monitoring system
SVM, Random Forest, MNE	Awareness state prediction
PCA + ML, MNE	Cultural sensitivity model for AI
Deep Fusion Models, Signal Processing	Application in neuro-UX and learning design
DeepSleepNet, CNN	AI sleep/dream mapper
CNN, Biostatistics	AI-aided mental health diagnosis
BERT, Emotion AI, EEG Processing	Adaptive emotional AI system
Emotion AI + Avatars	Companion AI that reacts to brain state
ROS, EEG BCI SDK	Brain-machine interface for neuroadaptive
NLP + LSTM + fMRI	Neuroscience + NLP interface
Reinforcement Learning, Python	Cognitive game for memory enhancement
ERP + Time-Series ML	Brain-based learning assessment
EEG Feature Extraction, ML	Brain-based cognitive metric
LDA, CNN, Feature Extraction	Brain-driven learning style predictor
Imitation Learning, DL	Human-like perception model
RNN, Time Series ML	Brain-controlled hand movement prediction
CNN + Fusion Networks	Perception model for educational UX
MFCC, CNN, Python	AI music therapy assistant
Emotion AI + Audio Models	AI-curated mood playlist
GANs, Style Transfer	Neuro-AI artistic assistant
GANs, TensorFlow, Neuroimaging	Brain-to-image translation
ERP, SVM, Emotion Recognition	Empathy detector for therapy or training
EEGNet, Keras	Brain-aware intelligent tutoring system
Time Series + ML	Cognitive time warping model
GNN, Cognitive ML	Insight into creativity and brain structures

NLP + Ethics Rule Engine	Educational tool for Neuro-AI ethics
Grad-CAM, SHAP, EEGNet	Explainable neuroscience model
ML Fusion Models, Python	Mental health monitoring app
SVM, ERP Analysis	Lie or intent detection system
Unity3D, BCI Python	Closed-loop immersive therapy system
Time Series + ML	Assistive tool for Parkinson's patients
ML, Feature Extraction, Python	Brain-behavior economic model
Edge Impulse, TensorFlow Lite,	Portable BCI-powered wearable system
Real-time ML, Scikit-learn	Smart alert system for road safety
Fairlearn, SHAP, Python	Ethical evaluation framework
SHAP, Fairlearn	Explainable and ethical neuroscience models
RL, BCI Device, Python	Personalized focus trainer
RL, Neurofeedback SDK	At-home digital ADHD trainer
Unity3D, BCI Python	Immersive hands-free gaming
Python, UX-Driven AI Design	Personalized accessible interface
fMRI Preprocessing, CNN, Python	Brain-aware speech decoder
LSTM, Signal Processing	Early alert system for epilepsy
EEG Signal Processing, TensorFlow	Brain-based ad effectiveness tool
Deep Learning + Theoretical Models	Exploratory model on neural consciousness
Image Registration, DL	Neuro-rehabilitation assessment
Feature Extraction + ML	Digital cognitive testing tool
Arduino, OpenBCI, Python	Brain-controlled prosthetic model
Prolog + DL Models	Explainable neuro-inspired AI memory module
BCI Software, Python	Communication system for disabled
CNN, RNN, DeepSleepNet	Sleep pattern diagnosis and tracking
LSTM, Sequence Prediction	Digital twin for brain simulation
Edge AI, Mobile App	Focus improvement tool for students
3D U-Net, MRI Preprocessing	Educational neuroanatomy tool
Deep Gaze Models, OpenCV	Attention-aware UX model

Sl. No	Sub-Domain	Project Area	Tentative Title	Dataset
HC1001	Accessibility HCI	Sip-and-Puff Controlled Computer Interface	Provide input alternative for users with severe motor impairments	Hardware Input
HC1002	Accessibility Tools	AI Keyboard for Motor Impaired Users	Predictive text interface using minimal movements	Keypress Dataset
HC1003	Adaptive Interfaces	AI-Based UI Customization Based on User Preference	Interface auto-adjusts layout, theme, and interaction method	UX Logs
HC1004	Adaptive Learning UI	Learning Content Personalization Based on User's Emotion	Adjust lesson delivery and pace based on real-time facial emotion	Custom + FER2013
HC1005	Adaptive Sound UI	Volume Control via Hand Gesture in Public Kiosks	Adjust system volume using silent gestures	Gesture Control Dataset
HC1006	Adaptive Systems	AI-Powered Adaptive e-Commerce Interface	Modify layout/offers based on click + facial reactions	Web Interaction Logs
HC1007	Adaptive UI for Disabilities	UI Optimizer for Color Blind and Dyslexic Users	Adjust color palettes and font styles automatically	WebAIM Dataset + UX Logs
HC1008	AI + HCI Ethics	Fairness-Aware UI Recommender System	Ensure UI elements do not discriminate across groups	UX Demographics Dataset
HC1009	AI Keyboard	Context-Aware Suggestion Keyboard for Programmers	Autocomplete keyboard tailored to code context	StackOverflow Posts
HC1010	AI-Enhanced HCI	AI-Based UX Design Recommendation Tool	Recommend optimal UI layout based on historical data and best practices	UX Case Studies Dataset
HC1011	Ambient HCI	Smart Ambient Sound Adjustment Based on Activity	Modify soundscape (white noise/music) based on focus and motion	Motion + EEG Dataset
HC1012	Ambient Smart UI	Mood Lighting with Sound + Emotion Feedback	Combine audio-visual ambiance based on detected emotion	Audio Dataset + Webcam
HC1013	AR HCI	AR Menu Card with Voice Ordering in Restaurants	View food details in AR and place order via voice	Unity AR + Custom Menu
HC1014	AR HCI	AR Home Decor Preview System	Allow users to visualize furniture in real room via AR	Unity + Custom Models
HC1015	AR/VR Interface	AR-Based Indoor Navigation for Campuses	Augmented reality to help new users find their way inside a building	Unity, ARCore
HC1016	Audio-HCI	Humming-Based Music Search System	Identify and search songs using humming as input	GTZAN + Humming Dataset
HC1017	Augmented Accessibility	Real-Time Sign Language to Text Conversion	Translate hand signs into real-time text	ASL Dataset
HC1018	BCI Gaming	Brain-Controlled Flappy Bird Game	Use attention/focus to control Flappy Bird jump	EEG from OpenBCI or NeuroSky
HC1019	Behavioral UI	Interface That Changes Based on User Patience Level	Track user frustration and adapt UI accordingly	Interaction Logs + Emotion Dataset
HC1020	Bilingual HCI	Dual Language Keyboard with Auto Language Detection	Detect user language on-the-fly and switch keyboard layout	Language Input Dataset
HC1021	Biometric HCI	Real-Time Emotion-Adaptive Presentation Tool	Change slide pacing/content if audience appears bored	Live Camera + Emotion Classifier
HC1022	Brain-Computer Interaction	EEG-Based Smart Wheelchair Control	Use mental commands to steer wheelchair	BCI Competition Dataset
HC1023	Brain-Controlled Games	Mind-Controlled Pong Game Using EEG	Use mental commands to play a classic pong game	BCI Dataset / OpenBCI
HC1024	Child-Friendly HCI	Interactive Learning Tablet for Kids with Voice + Touch	Build a kid-safe learning UI with multiple interaction modes	Custom Content
HC1025	Cognitive Interfaces	Interface that Adjusts Speed Based on User Focus	Change speed of tutorials or interfaces based on mental attention	EEG Logs
HC1026	Cognitive Load HCI	Mental Workload Estimator for UI Testing	Evaluate if UI is cognitively heavy using EEG	Mental Load EEG Dataset
HC1027	Cognitive UI	UI Elements Repositioned Based on Brain Load	Rearrange layout based on user's brain activity	EEG + UI Logs
HC1028	Cognitive UX Evaluation	Cognitive Load Detector for AR Interfaces	Evaluate mental effort during AR app usage	EEG + AR Simulation Logs
HC1029	Cognitive Workload HCI	UX Monitor for Overload Detection in Data Dashboards	Alert designers if dashboards become too complex	Simulated Logs + EEG
HC1030	Collaborative HCI	Cross-Device Document Editor with Eye-Gaze Transfer	Let users continue work across devices using gaze trail	UX Gaze Log Dataset
HC1031	Context-Aware UX	Weather and Time-Aware Web UI for Smart Devices	Modify layout/theme depending on time of day and weather	Weather API + Time Logs
HC1032	Conversational UI	Chatbot for College Information System	Voice and text-based Q&A interface for college-related queries	College FAQ Dataset
HC1033	Creative HCI	Brainwave-Controlled Digital Art Generator	Generate abstract art based on user mental state	EEG + Art Mapping Dataset
HC1034	Education + HCI	AI-Powered Tutor Bot that Tracks User Confusion via Webcam	Detect confusion and offer hints or simplify explanation	Webcam + Learning Dataset
HC1035	Educational HCI	Gamified Learning Interface for Coding Basics	Teach coding through drag-and-drop games	Blockly, Scratch Environment

HC1036	Emotion + Gaming	AI-Based Game Character Reaction to Player Mood	Make NPCs react based on player's facial emotion	FER + Custom Game Dataset
HC1037	Emotion Recognition	Webcam-Based Real-Time Mood Detector	Classify emotions like happy, sad, neutral from facial cues	FER2013
HC1038	Emotion-Adaptive Games	Facial Emotion-Based Game Difficulty Adjustment	Make games harder or easier based on player facial expression	Webcam Feed
HC1039	Emotion-Aware HCI	Smart Lighting System Based on Facial Emotions	Adjust ambient lighting based on user emotion	FER2013
HC1040	Emotion-Aware UI	Emotion-Adaptive UI for Learning Platforms	Adapt interface layout and difficulty based on real-time emotion	DEAP Dataset
HC1041	Emotion-Based Browser UI	Change News Feed Layout Based on Reader Mood	Tailor content layout to retain user based on mood detection	Webcam Feed + News Dataset
HC1042	Emotion-Driven HCI	Adaptive Mobile App Theme Based on User Mood	Adjust color schemes, fonts, layout based on emotion	FER2013 / Custom
HC1043	Eye Tracking	Eye-Controlled Mouse Pointer	Enable pointer movement based on eye gaze	OpenCV + Webcam
HC1044	Feedback-Driven UI	Interface that Asks for Feedback Based on User Dwell Time	Detect when users hesitate or stay too long, then ask why	Web Interaction Dataset
HC1045	Game HCI	Accessibility Game Using Switch or Eye Gaze	Develop a simple game for motor-impaired gamers	Custom Dataset
HC1046	Game HCI	Adaptive Game Narratives Based on Facial Reactions	Change storylines based on real-time emotions	Facial Expression Dataset
HC1047	Gaze Interaction	Gaze-Based Form Filler for Accessibility	Auto-fill basic forms using eye gaze tracking	Simulated User Data
HC1048	Gaze Tracking	Smart Scroll System Based on Eye Movement	Scroll webpage content using gaze direction	GazeCapture
HC1049	Gaze-Aware Web UX	Eye-Tracking Based Navigation System for Browsers	Navigate web pages using only gaze direction	GazeCapture Dataset
HC1050	Gesture Recognition	Hand Gesture-Based Smart Home Control	Use hand signs to control devices like lights or fans	Hand Gesture Dataset
HC1051	Haptic Feedback Systems	Tactile Feedback Keyboard for Visually Impaired	Provide vibration-based feedback while typing	Custom
HC1052	HCI for Banking UX	ATM Interface with Voice and Facial Emotion Support	Enhance ATM accessibility and feedback with multimodal interaction	Custom Dataset
HC1053	HCI for Gaming	Eye + Voice-Based Game Control	Play simple games using gaze and spoken words	Custom
HC1054	HCI for Industrial Workers	Voice-Guided Smart Helmet Interface	Provide voice support for field workers to report incidents hands-free	Custom Audio Dataset
HC1055	HCI for Law Enforcement	Facial Emotion Logging for Police Interrogation Interfaces	Record emotional responses during questioning sessions	Emotion Dataset (FER, RAF-DB)
HC1056	HCI for Mental Health	Mood Diary with Facial Emotion Detection	Let users log moods automatically via facial expressions	Emotion Dataset
HC1057	HCI for Mental Health	Sentiment Dashboard for Mood Tracking	Track and display user sentiment over time	Custom User Data
HC1058	HCI for Safety	Voice-Triggered Emergency Alert System	Activate alerts and send location with just voice command	Google Maps API
HC1059	HCI in Education	Adaptive Quiz System Based on Student Confidence Level	Quiz difficulty adjusts based on user performance + facial confidence	Custom Dataset
HC1060	HCI in Healthcare	AI-Based Patient Feedback Collector Kiosk	Take patient input via voice, touch, and emotion	Hospital Feedback Dataset
HC1061	Inclusive HCI	Adaptive Web Interface for Elderly Users	Change fonts, contrast, and layout based on user age profile	Web Analytics
HC1062	Mind-Aware UX	Interface that Shuts Down when User is Distracted	Monitor user focus and disable distracting tabs	EEG or Webcam Gaze Dataset
HC1063	Mobile HCI	One-Handed Navigation App Interface Design	UI elements adapt to thumb reach zone	UX Feedback
HC1064	Mobile HCI	One-Button App Navigation for Elderly Users	Simplified app with single tap multi-option UI	UX Testing Dataset
HC1065	Multi-Device Interaction	Seamless File Transfer Between Devices via Hand Gestures	Use gestures to transfer files across screens	Gesture Dataset
HC1066	Multilingual HCI	Multilingual Chat Interface with Voice and Text	Enable multilingual access to interfaces with speech + text support	Language Dataset
HC1067	Multimodal Interfaces	Gesture + Voice Controlled Presentation Navigator	Allow hands-free slide navigation during talks	Custom Commands Dataset
HC1068	Multimodal Smart Appliances	Voice + Gesture Controlled Washing Machine	Enable appliances to operate via dual control input	Gesture and Voice Dataset
HC1069	Neurofeedback HCI	Meditation Assistant with Brainwave Monitoring	Provide real-time guidance based on EEG during meditation	OpenBCI, Meditation EEG Dataset
HC1070	Neuro-HCI	Focus Tracker for Online Exams Using EEG	Monitor student attention during online assessments	EEG Dataset
HC1071	Neuro-HCI	Eye Blink-Controlled Smart Typing Assistant	Use blink patterns as input for typing letters	Blink Signal Dataset

HC1072	Personalized UX	User Behavior-Based Interface Color Adaptation	Change UI color schemes based on user activity and emotion	UX Logs + Emotion Dataset
HC1073	Proxemic Interaction	Distance-Based Control of Interactive Displays	Interface changes with proximity of user	Sensor Logs (Ultrasonic or IR)
HC1074	Public Interaction HCI	Voice + Face Authenticated Kiosk System	Secure access to kiosk using face and voice biometrics	VGGFace2 + VoicePrint Dataset
HC1075	Real-Time Multimodal HCI	Fusion of Voice + Facial Expression for Smart TV Control	Control media using emotional cues + voice commands	AVEC Dataset
HC1076	Real-Time UX Testing	Crowd Emotion Detection During Product Demos	Analyze facial feedback in group settings	Group Webcam Dataset
HC1077	Sign Language UX	Two-Way Sign Language Translator (Text-to-Sign and vice versa)	Convert sign language to text and also speak text as sign	RWTH-PHOENIX-Weather 2014T
HC1078	Smart Appliances UX	Voice + Gesture-Controlled Microwave UI	Operate appliances with voice or hand gestures	Simulated Commands
HC1079	Smart Classroom HCI	Attention Monitoring for Teachers via Classroom Camera	Track if students are attentive using group-level emotion analysis	Webcam + FER Dataset
HC1080	Smart Office HCI	Voice-Activated Office Automation System	Control office appliances and schedules using voice	Simulated Device Control Data
HC1081	Smart Vehicles UX	Voice and Gaze-Based Infotainment Control for Cars	Reduce driver distraction by voice/gaze control of music/maps	Simulated Dataset
HC1082	Smart Wearables UX	Gesture-Controlled Smartwatch Interface	Replace touch with gestures for smartwatch navigation	Simulated Dataset
HC1083	Spatial Computing	Room-Aware Smart Interface Using Depth Cameras	Display relevant content based on user location in room	Kinect or RealSense
HC1084	Spatial HCI	AR-Based Indoor Object Locator	Point AR device to locate items tagged in database	Unity, Indoor Map + AR Labels
HC1085	Tangible HCI	Smart Desk that Changes Layout Based on Task	Desk configuration changes for writing, drawing, coding etc.	Motion Detection + Task Log
HC1086	Touch Feedback Systems	Smart Braille Pad with Dynamic Text Translation	Convert on-screen text to dynamic Braille output	Text Dataset
HC1087	Touchless Accessibility	Tongue Motion-Controlled Smartphone Interface	Navigate phone using mouth-based sensor input	IMU Tongue Sensor Dataset
HC1088	Touchless Menu Interface	Gesture-Based Food Ordering Kiosk	Order food from kiosk with hand gestures	Hand Pose Dataset
HC1089	Touchless Robotics	Gesture-Based Trash Sorting Robot	Control a robot to segregate waste using hand gestures	Gesture Dataset
HC1090	Touchless UI	Smart Mirror with Gesture-Based UI	Build a smart mirror interface with gesture controls	Gesture Dataset
HC1091	Typing Interface Innovation	Brain-Driven Virtual Keyboard	Use EEG signals to select characters from a virtual layout	BCI Dataset
HC1092	Virtual Assistants	Context-Aware AI Assistant for Labs	Respond to lab-related queries and give smart reminders	Custom Dataset
HC1093	Visual Impairment Support	Smart Object Identifier for the Blind	Read out object names from camera input	COCO Dataset
HC1094	Voice + Emotion Hybrid UI	Mood-Aware Smart Home Control via Voice and Emotion	Trigger home actions based on tone and emotional cues	Audio + Emotion Dataset
HC1095	Voice Interaction	AI Voice Assistant for Visually Impaired	Provide spoken feedback and voice commands for daily navigation	LibriSpeech, Custom Commands
HC1096	Voice-Controlled UX	Voice-Activated Calendar and To-Do App	Build a productivity app with full voice interaction	Custom Commands
HC1097	VR HCI	Gesture-Based Navigation in Virtual Reality	Navigate VR environment using hand gestures	Unity VR Environment
HC1098	Wearable HCI	Vibration-Based Alert System for Deaf Users	Notify users with vibration patterns for alerts	Simulated Sensor Input
HC1099	XR Accessibility	Voice and Gesture Input for VR for Visually Impaired	Use alternative input to access VR experiences	VR SDK + Custom Scripts
HC1100	XR Feedback Systems	Haptic Feedback Gloves for Virtual Interaction	Provide touch sensation in VR environments	Simulated Data

Tools Used	Expected Outcome
Arduino, Python	Inclusive interface for disabled users
ML, Flask, Eye Tracker	AI typing assistant
ML Models, Python	Personalized user dashboard
OpenCV, Python, Flask	Emotion-aware e-learning experience
Python, Arduino, Hand Detection	Touch-free sound control
UX AI, Python, Flask	Personalized shopping portal
JavaScript, UX Engine	Accessibility enhancement toolkit
Fairlearn, SHAP, JS	Inclusive and fair UI engine
NLP, GPT API	Intelligent code typing experience
Python, NLP, ML	Smart UX design advisor
ESP32, Python, ML	Personalized environment enhancer
ML + IoT Lights + TTS	Adaptive sensory environment
Unity3D, Android Studio	Smart restaurant ordering system
Unity3D, ARKit / ARCore	Interactive AR shopping experience
Android Studio, Unity	AR indoor guide
Audio Signal Processing, Keras	Touch-free music finder
CNN, OpenCV, TensorFlow	Real-time sign-to-text translator
Unity, BCI Integration	Fun neuro-game experience
UX AI, Webcam, Python	Adaptive frustration-aware UI
NLP, JavaScript, Keyboard APIs	Smart multilingual input interface
Python, Face API, PowerPoint API	Dynamic presenter assistant
OpenBCI, Python	BCI-controlled mobility
Unity3D, OpenBCI SDK	Brain-game interface
Android Studio, Blockly	Child-adaptive educational tool
Python, MNE, Keras	Adaptive e-learning tool
MNE, SciKit-Learn	Usability testing tool
Brain-UX Mapping, Python	Personalized attention-friendly UI
OpenBCI, MNE, SciKit-Learn	AR usability analytics tool
EEGNet, Python, Dash	Cognitive-aware dashboard recommender
WebSocket, EyeTrackLib	Seamless device collaboration
JS, CSS, Flask	Contextual smart UI
Dialogflow, Python, JS	Smart helpdesk bot
GANs, BCI SDK, Python	Brain-driven generative artwork
AffectNet, OpenCV, Flask	Smart education agent
HTML5, JavaScript	Game-based e-learning

Unity3D, Affectiva SDK	Emotionally immersive game design
CNN, Keras, OpenCV	Emotion-aware digital environment
OpenCV, EmotionNet	Emotion-aware gaming
OpenCV, CNN, Arduino	Mood-based intelligent lighting
Affectiva API, JavaScript	Personalized learning experience
Emotion Recognition, JavaScript	Emotionally tuned content delivery
OpenCV, Android Studio	Emotion-responsive mobile UI
Python, Dlib, EyeTrackLib	Hands-free control interface
JS, Heatmaps, Feedback API	Real-time UX improvement loop
Unity3D, EyeTrackLib, Arduino	Inclusive gaming environment
Unity3D, ML, OpenCV	Emotion-driven interactive storytelling
Python, EyeTrackLib	Gaze-controlled UI
Python, OpenCV	Gaze-driven browsing experience
Python, WebGazer.js	Inclusive browser interface
OpenCV, Mediapipe, Arduino	Gesture-to-device interface
Arduino, Vibration Sensors	Haptic-enhanced typing tool
Python, Face API, TTS	Emotion-aware, inclusive ATM UI
Unity3D, Gaze SDK, Speech API	Inclusive game interface
SpeechRecognition, NodeMCU,	Smart safety wearable
AffectNet, Python, Heatmap	Behavioral analytics tool for safety
React, OpenCV, Django	Digital wellness assistant
Dash, NLP, Face API	Mental wellness visualization tool
Twilio, SpeechRecognition, Flask	Safety communication tool
Python, Flask, Affect Analysis	Smart assessment system
Flask, Face Detection, Speech API	Automated health feedback system
HTML, CSS, JavaScript, UX Design	Age-friendly web interface
Python, UX AI Toolkit	Distraction prevention system
Kotlin, Figma, Android Studio	Ergonomic mobile UI
Kotlin, Figma	Senior-friendly app interface
Python, Mediapipe, Socket	Gesture-based device interaction
Dialogflow, Google Translate API	Language-inclusive UI
Python, OpenCV + SpeechRecognition	Interactive multimodal control
Embedded ML, Raspberry Pi	Inclusive smart appliance
Python, MNE, BCI SDK	Brain-driven mindfulness assistant
OpenBCI, Python, Flask	Brain-based exam proctoring
Python, Eye Blink Detection	Assistive tech for motor-impaired users

ML + CSS DOM Control	Context-aware visual interface
Arduino, Web UI	Proxemic-responsive system
FaceNet, Speaker Recognition	Multi-biometric smart kiosk
Python, ML Fusion	Smart TV with emotional intelligence
OpenCV, ML, Real-time Dashboard	Product pitch testing tool
TensorFlow, MediaPipe	Bilingual sign-text interface
Arduino + ML Models	Contactless smart appliance control
Python, OpenCV, Aggregated Analytics	Real-time classroom feedback
NodeMCU, IFTTT, Google Assistant	Smart workspace assistant
Unity3D, EyeTrackLib, Speech API	Smart car infotainment UI
Embedded C, TinyML, IMU	Hands-free smartwatch control
Python, Unity3D, Depth Mapping	Smart spatial user interface
Unity3D, Marker Detection	Indoor navigation and object-finder
Arduino, Sensors, Motors	Intelligent workspace configurator
Servo Motors, Arduino	Real-time Braille display
Arduino, ML, Android	Ultra-accessible phone controller
Python, Mediapipe	Touch-free ordering interface
Arduino, OpenCV, Servo Motors	Contactless human-robot interface
Raspberry Pi, OpenCV, HTML5	Daily-use touchless interface
P300 Speller, Python, BCI2000	EEG typing system
BERT, Python, ChatGPT API	Smart lab AI assistant
Object Detection (YOLO), TTS	Portable audio object recognizer
Speech API, Affectiva, Python	Adaptive and expressive home automation
Python, SpeechRecognition, TTS	Personalized voice assistant
SpeechRecognition, Python, Flask	Hands-free personal assistant
Unity3D, VR SDKs	Immersive touch-free navigation
Arduino, Vibration Motors	Wearable assistive device
Unity3D, Text-to-Speech, Gestures	Inclusive virtual reality experience
Unity3D, Arduino, Haptics API	Enhanced VR realism via touch

Sl. No	Sub-Domain	Project Area	Tentative Title	Dataset
RSG001	Agriculture Monitoring	Crop Type Classification using Multispectral Imagery	Distinguish crop types using spectral data	Sentinel-2, BigEarthNet
RSG002	Agri-Mapping	Fertilizer Zone Classification using Crop Spectral Reflectance	Suggest optimal fertilizer application based on spectral zones	Sentinel-2, Fertility Maps
RSG003	AI for Terrain Hazard	Mudslide Prone Area Prediction from Rainfall + Slope Data	Predict risk areas in mountainous regions	DEM + Precipitation Data
RSG004	AI on Thermal Imagery	Vehicle Detection in Thermal Satellite Imagery	Detect vehicles for night-time traffic analytics	Thermal Overhead Dataset
RSG005	AI-Driven Geo Dashboard	Building a Real-Time Geospatial Dashboard for Disaster Response	Integrate live feeds from multiple satellite APIs for emergency response	NASA, Copernicus, GEE
RSG006	Air Quality Mapping	AI-Based Spatiotemporal Air Pollution Estimation	Interpolate AQI data from sparse sensors using satellite data	Sentinel-5P, CPCB Air Quality
RSG007	Arctic Monitoring	Sea Ice Concentration Mapping Using Passive Microwave RS Data	Track melting ice zones to assess polar climate trends	NSIDC Sea Ice Data
RSG008	Augmented Reality + RS	AR Visualizer for Forest Cover and Land Change	Use mobile AR to show past vs present land use via satellite overlays	Time-Series Satellite + AR Toolkit
RSG009	Climate AI	Predicting Monsoon Onset Based on Ocean and Land Satellite Data	Forecast monsoon arrival using sea surface temp + vegetation changes	NOAA, MODIS, NDVI
RSG010	Climate Change Monitoring	Glacier Retreat Analysis using Temporal Remote Sensing Data	Monitor melting glaciers using time-series imagery	Landsat Archive, SRTM
RSG011	Cloud Detection & Removal	Cloud Obstruction Removal from Satellite Images Using AI	Automatically remove cloud-covered areas from satellite imagery	Sentinel-2 Cloudy Dataset
RSG012	Coastal Management	Shoreline Change Detection using Time-Series Images	Monitor erosion and sediment movement	Sentinel-2, Landsat
RSG013	Coral Reef Monitoring	Coral Reef Health Monitoring using Multispectral Data	Detect bleaching zones using spectral reflectance	Landsat 8 + NOAA Data
RSG014	COVID-19 Geo Tracing	Movement Pattern Analysis from Satellite During Lockdown	Detect reduced human activity in urban zones during pandemic	Google Earth Engine, Vehicle
RSG015	Crop Insurance Claim Support	Post-Disaster Crop Loss Verification via Drone & RS	Support insurance claims with post-flood satellite analysis	Drone, Sentinel-2 Before/After
RSG016	Crop Water Stress Detection	Early Crop Stress Mapping Using Thermal + RGB Data	Detect stressed crops before visual signs appear	UAV Thermal + Sentinel Imagery
RSG017	Crowd Density Mapping	GeoAI-Based Crowd Density Estimation in Tourist Areas	Estimate people density from overhead images	Drone Images, COCO Dataset
RSG018	Deep Cloud Masking	Advanced Cloud Segmentation Using Deep Learning	Precisely identify clouds in RS images using deep segmentation	CloudNet, Sentinel-2
RSG019	Deep Forest Monitoring	AI-Based Tree Species Classification using Hyperspectral Data	Identify tree species from satellite hyperspectral images	Indian Pines Dataset, AVIRIS
RSG020	Deforestation Detection	Forest Loss Detection over Time using Remote Sensing	Detect and quantify deforestation patterns	MODIS, Hansen Global Forest
RSG021	Desert Locust Movement Mapping	Forecasting Locust Migration using RS + Wind + Vegetation Data	Predict migratory path of locusts from spatial indicators	FAO Locust Data, NDVI, Wind
RSG022	Desertification Monitoring	Monitoring Land Degradation in Arid Zones Using NDVI	Track progression of desertification over years	MODIS, Landsat NDVI
RSG023	Digital Cartography	Auto Map Generation from Satellite + OpenStreetMap Data	Build accurate digital maps for rural areas using AI	OSM, High-res Satellite Imagery
RSG024	Digital Elevation Models	Road Suitability Estimation in Hilly Terrain	Suggest best roads considering elevation, slope, and land cover	SRTM, ASTER DEM
RSG025	Digital Twin for Smart Cities	3D Urban Modeling from Satellite + LiDAR Data	Create digital twin of cities from multisource geospatial data	LiDAR, Aerial Photos
RSG026	Disaster Management	Flood Detection using SAR Imagery and Deep Learning	Detect flood zones from radar images using DL	Sentinel-1 SAR, NASA FloodMap
RSG027	Environmental Monitoring	Urban Green Cover Analysis from Satellite Data	Measure green vegetation index in cities	Sentinel-2, NDVI
RSG028	Fire Recovery Mapping	Vegetation Recovery Monitoring Post Forest Fire	Monitor regrowth post wildfires using NDVI patterns	MODIS + Sentinel NDVI Time
RSG029	Fire Risk Prediction	Wildfire Susceptibility Mapping using AI + Remote Sensing	Predict zones likely to face wildfires based on vegetation + temp.	MODIS, Fire Weather Index Dataset
RSG030	Fog Computing + Remote Sensing	Edge-Based Crop Health Detection using Drones	Deploy AI on edge devices for in-field crop classification	Custom UAV Dataset
RSG031	Forest Carbon Mapping	Carbon Stock Estimation Using RS and Biomass Indices	Estimate carbon content in forest zones for carbon credit monitoring	Sentinel-2, LiDAR, Biomass Index
RSG032	Forest Fire Monitoring	Fire Hotspot Detection using MODIS + AI	Detect active fire zones using thermal data	FIRMS, MODIS, VIIRS
RSG033	Forest Zonation	Wildlife Buffer Zone Estimation Using Land Use + Terrain	Recommend buffer zones to reduce human-wildlife conflict	Forest Department GIS, DEM
RSG034	GeoAI + NLP	Automated News Tagging with Geolocation from Satellite Context	Tag disaster news articles with satellite-based geotags	News API + OpenStreetMap
RSG035	GeoAI for Smart Irrigation	AI-Powered Irrigation Scheduler from Satellite + Soil Sensors	Optimize irrigation time based on satellite NDVI + IoT soil data	NDVI, IoT sensors, MODIS

RSG036	GeoEthics	Fairness in AI for Land Allocation using Geospatial Bias Analysis	Detect bias in AI-based urban planning or land distribution	Land Allotment GIS Data
RSG037	Geospatial Crime Mapping	Heatmap of Crimes using Spatial Interpolation	Visualize crime-prone areas using location analytics	Police Records + City Map
RSG038	Geospatial ML	Terrain Classification using Elevation and Spectral Features	Categorize terrain into valleys, hills, etc.	SRTM, Landsat
RSG039	Geospatial Predictive Modeling	Forecasting Urban Expansion Using Time Series Satellite Imagery	Predict how urban areas will grow using historical satellite snapshots	Landsat 1990-2020
RSG040	Geospatial Sentiment Mapping	GeoAI-based Sentiment Mapping of Public Response to Land	Extract, classify, and visualize public sentiment geospatially	Twitter + RS Overlays
RSG041	Groundwater Resource Mapping	Groundwater Zone Prediction Using RS + ML + Rainfall	Map aquifer recharge zones using RS imagery + geological features	ISRO Bhuvan, SRTM, Rainfall
RSG042	Heatwave Monitoring	Urban Heatwave Intensity Mapping Using Thermal RS Data	Detect urban heatwave zones using LST (Land Surface Temp)	Landsat-8 TIR, MODIS
RSG043	Hydrological Modeling	River Basin Catchment Area Analysis with Satellite DEM	Study flow accumulation and watershed boundaries	SRTM, HydroSHEDS
RSG044	Hydrology AI	River Mapping using Remote Sensing + CNN	Identify river flow paths and banks from imagery	Landsat-8, RiverNet Dataset
RSG045	Infrastructure Health	AI-Based Bridge and Dam Monitoring from Aerial Imagery	Detect cracks, stress, and wear using high-res images	Drone Image Dataset
RSG046	Lake Health Assessment	Algal Bloom Detection in Lakes Using Spectral Indices	Monitor eutrophication by detecting bloom zones	MODIS, Sentinel NDWI/NDVI
RSG047	Land Cover Classification	Land Cover Mapping from Satellite Images using CNN	Classify land types (forest, urban, water, agriculture) from satellite data	Sentinel-2, EuroSAT
RSG048	Landslide Detection	Landslide Risk Mapping Using DEM and Satellite Imagery	Identify landslide-prone regions using slope and rainfall patterns	SRTM + Precipitation Data
RSG049	Marine Pollution Detection	Plastic Waste Detection in Oceans from Aerial Views	Detect floating plastic clusters in ocean using spectral or drone images	UAV + Sentinel-2 imagery
RSG050	Marine Traffic Detection	Ship Detection using Satellite and AIS Data	Combine automatic identification system (AIS) and satellite to monitor	Sentinel-1, AIS Logs
RSG051	Multi-Hazard Mapping	Overlay Risk Zones of Earthquake + Flood + Fire	Build a composite disaster vulnerability map	ISRO Data, MODIS, DEM
RSG052	Multi-Source Data Fusion	Fusing UAV + Satellite + Ground Sensor Data for Forest Health	Integrate multiple sensors to track plant disease and soil health	UAV RGB, Sentinel-2, IoT
RSG053	Ocean Monitoring	Oil Spill Detection from SAR Imagery using AI	Detect spills using radar reflectance patterns	Sentinel-1 SAR Oil Spill Dataset
RSG054	Post-Disaster Damage Mapping	Damage Detection after Earthquakes using Pre/Post Satellite Images	Analyze change in infrastructure after natural disasters	Pleiades or Sentinel-2
RSG055	Precision Aquaculture	Water Quality Index Estimation for Fish Farms	Use RS data to estimate turbidity, temperature for aquaculture	MODIS + UAV Imagery
RSG056	Precision Irrigation	Irrigation Zone Mapping Based on NDVI + Weather	Identify under-irrigated zones in farmlands	MODIS NDVI + Rainfall Data
RSG057	Railway Safety Monitoring	Track Crack Detection from Drone Imagery	Detect faults/cracks in railway tracks from high-res drone footage	Custom UAV Track Dataset
RSG058	Real-Time Crop Monitoring	Drone + Satellite Fusion System for Real-Time Crop Status	Fuse aerial and satellite data for accurate farm health	UAV + Sentinel Images
RSG059	Remote Sensing + Blockchain	Land Ownership Verification using Geotagged Satellite Imagery	Validate land parcels using blockchain + satellite proof	Cadastral + Remote Sensing
RSG060	Remote Sensing Ethics & Privacy	Identifying and Masking Private Property in Satellite Imagery	Automatically detect and anonymize residential zones in public maps	OSM + Sentinel-2
RSG061	Remote Sensing for SDGs	GeoAI for Sustainable Development Goal (SDG) Monitoring	Use RS data to track SDG targets like water, agriculture, and cities	UN Geo Datasets, GEE
RSG062	Renewable Energy Planning	Wind Farm Location Suitability using Terrain + Weather	Select optimal areas for wind farms based on wind, elevation, land use	Global Wind Atlas, DEM
RSG063	RS for Land Tenure Security	Mapping Unregistered Land Holdings Using RS + Blockchain	Register and verify land ownership using satellite boundary maps	Cadastral + Sentinel + IPFS
RSG064	RS for Water Quality	Mapping Water Quality Parameters in River Stretches	Derive turbidity, pH, TDS indirectly from reflectance indices	Sentinel-2, In-situ Sample Dataset
RSG065	RS-based Asset Tracking	RS-based Geo-Tagging for Public Infrastructure	Tag and monitor roads, schools, bridges using satellite imagery	High-Res RS + Government Maps
RSG066	RS-based Crop Rotation System	Temporal Crop Sequence Classification from Satellite Images	Automate tracking of crop cycles for planning	MODIS, Sentinel-2 Time Series
RSG067	Rural Road Planning	Remote Sensing Based Feasibility Analysis for New Rural Roads	Determine road viability using slope, land use, and environmental	DEM, Land Use Maps
RSG068	Satellite + IoT Fusion	Remote Irrigation Control using Satellite & Sensor Fusion	Combine NDVI + IoT soil moisture data for precision irrigation	IoT Sensor Data + Sentinel-2
RSG069	Satellite Data Compression	Optimizing Satellite Image Storage using AI Compression	Reduce storage size without compromising classification performance	Landsat, Sentinel-2
RSG070	Smart Agriculture	Weed Detection in Farmlands Using High-Res Imagery + AI	Identify and map weed regions in crop fields	Drone Image Dataset
RSG071	Smart City Planning	Noise Map Generation using IoT + Satellite Data Fusion	Create urban noise maps combining ground sensors and land-use	Urban IoT Dataset + Sentinel-2

RSG072	Smart Farming	AI-based Yield Prediction using Geospatial and Weather Data	Predict agricultural yield using spatial + climate parameters	GeoAI Crop Dataset, Weather APIs
RSG073	Smart Mining	Illegal Mining Detection using Satellite Change Detection	Monitor forest/mountain regions for illegal excavation	Landsat + Sentinel-2
RSG074	Smart Mining Surveillance	Drone + RS Monitoring of Mining Activity	Use multi-modal inputs to monitor legal vs illegal mining	UAV Videos, Sentinel-2
RSG075	Smart Water Management	Leak Detection in Canal Networks using Drone + Satellite Imagery	Detect water leakage in irrigation canals via image analysis	UAV Footage + Sentinel-2
RSG076	Snow Cover Mapping	Seasonal Snow Cover Area Analysis from Satellite	Monitor snow coverage variation in mountainous regions	MODIS Snow Cover Data
RSG077	Soil Classification	Soil Type Mapping from Satellite Reflectance	Classify soil zones using spectral data	ISRIC Soil Data + Sentinel-2
RSG078	Soil Erosion Analysis	Predicting Soil Erosion Zones Using DEM and Rainfall Intensity	Analyze areas prone to topsoil loss in hilly regions	DEM, Precipitation, Vegetation
RSG079	Soil Moisture Estimation	Predict Surface Soil Moisture from Sentinel Bands + ML	Estimate moisture content using reflectance-based models	SMAP, Sentinel-1 SAR
RSG080	Solar Potential Mapping	Rooftop Solar Suitability Detection using Satellite Images	Identify rooftops suitable for solar panels	High-Res Urban Imagery
RSG081	Spatiotemporal AI	Predicting Vegetation Index (NDVI) for Next Season	Train model to forecast greenness for a region	MODIS NDVI Time Series
RSG082	Spatio-Temporal Analysis	Seasonal Vegetation Pattern Analysis from Time-Series Data	Study greenness trend over months/years	MODIS NDVI Time-Series
RSG083	Spatiotemporal Risk Modeling	Dengue Spread Prediction with Geospatial Heat and Rainfall Data	Predict mosquito-borne disease zones from environmental patterns	Rainfall, Temperature, Health Data
RSG084	Subsurface Mapping	Ground Penetrating Radar + Satellite Fusion for Archaeological	Enhance subsurface features using satellite + GPR overlays	Satellite + GPR Data
RSG085	Temporal Geospatial Modeling	Seasonal Water Body Analysis Using Time Series Satellite Data	Identify changes in lake or river areas during different seasons	MODIS NDWI Time Series
RSG086	Tourism + GeoAI	Tourist Footfall Heatmap using Social Media Geotagged Data	Generate tourism density maps using user-generated geo data	Twitter API, Instagram, Foursquare
RSG087	Traffic & Mobility	Vehicle Density Estimation using Overhead Satellite Images	Estimate traffic density from urban satellite scenes	DOTA Dataset, COWC
RSG088	Transport + GeoAI	Optimizing Public Transit Routes with Geospatial Demand Mapping	Use geospatial clustering of commuters to plan better bus/train routes	GPS Transport Logs, City Map
RSG089	UAV-Satellite Synergy	Hybrid Forest Survey using UAV and Sentinel Data	Combine drone detail and satellite scale for multi-resolution monitoring	UAV + Sentinel Imagery
RSG090	Urban Analytics	Urban Heat Island Detection from Thermal Satellite Images	Identify urban zones with higher temperatures	Landsat-8 TIR Dataset
RSG091	Urban Flooding Prediction	Urban Flash Flood Forecasting using DEM and Rainfall Data	Predict city flood zones using drainage capacity and topography	DEM, Rainfall Data, Urban Map
RSG092	Urban Forest Assessment	Tree Cover Loss Detection in Urban Areas	Analyze tree density reduction in cities due to construction	Google Earth + Sentinel
RSG093	Urban Green Index	Ranking Cities Based on Green Cover Index from RS	Develop a green score for Indian cities based on vegetation coverage	Sentinel-2 NDVI, Urban Boundaries
RSG094	Urban Growth Analysis	Urban Sprawl Mapping using Multi-Decadal Satellite Data	Track growth of urban regions over decades	Landsat 1980-2020
RSG095	Urban Noise Estimation	Estimating Noise Pollution using RS and Proximity to Infrastructure	Use satellite + road data to model noise zones	Urban Infrastructure Maps + RS
RSG096	Urban Planning	Road and Building Footprint Detection from Satellite Imagery	Extract infrastructure features for planning	INRIA Aerial Image Labeling
RSG097	Urban Shadow Mapping	Shadow Detection in Dense Urban RS Imagery	Identify areas with persistent shadow for solar planning	Sentinel-2, High-Res Urban Data
RSG098	Vector-Borne Disease Prediction	Dengue/Malaria Risk Zones Mapping using Satellite + Health Data	Predict high-risk zones by combining vegetation, water, and weather	NDVI, Rainfall, Health GIS
RSG099	Water Resource Management	Reservoir Level Estimation using Satellite Images	Estimate water level using spectral reflectance	Sentinel-2, MODIS Aqua
RSG100	Wildlife Conservation	Habitat Mapping for Endangered Species Using Satellite Data	Map vegetation zones for target species conservation	MODIS, Wildlife Tracker Data

Tools Used	Expected Outcome
Google Earth Engine, SVM, ML	Smart agriculture monitoring system
K-Means, ML, GEE	Smart nutrient application advisor
Logistic Regression, Raster Tools	Mudslide risk zone classifier
YOLO + IR Image Preprocessing	Thermal traffic monitoring system
Python Dash, Streamlit, LeafletJS	Live geospatial control center
Interpolation, ML, Python, Folium	Pollution prediction map
Time-Series Plotting, Image	Climate change polar tracker
Unity3D, GEE, ARCore	AR-based land awareness educational tool
LSTM, Time-Series Models	Pre-monsoon forecast system
Python, NDWI, Matplotlib, ArcGIS	Visual analytics for glacier loss
GANs, DeepFill, Image Inpainting	Clear imagery generation tool
Change Detection ML, ArcGIS	Coastal erosion analytics
NDVI/NDWI, Python	Coral health prediction map
Change Detection, Python, GEE	Human activity change analyzer
Image Differencing, QGIS	Transparent agri-insurance claim system
Thermal Indices, Stress Classifier	Preventive crop health planner
YOLOv5, OpenCV, Geotag Tools	Event or festival crowd estimator
DeepLabV3+, Keras, OpenCV	Improved preprocessing pipeline
CNN, Spectral Feature Extraction	Biodiversity monitoring model
NDVI, GIS, Python, EO Browser	Environmental impact dashboard
ML + Wind Field Analysis	Agri-threat prediction model
Python, QGIS, NDVI Trendline	Early alert system for desertification
ML, Tile Mapping, Python	Automated cartographic mapping system
SAGA GIS, Python, Routing	Terrain-based road planner
Blender, GIS, Point Cloud AI	Immersive urban digital twin
Python, Keras, QGIS, Google Earth	Real-time flood mapping system
QGIS, Python, Google Earth Engine	Greenness index map for cities
GEE, Python, Spline Interpolation	Forest restoration monitoring system
ML, GIS, Raster Models	Preventive forest fire planning tool
Jetson Nano, PyTorch, OpenCV	On-device real-time crop analytics
QGIS, ML, Raster Analytics	Carbon sequestration estimation model
Keras, OpenCV, GEE	Real-time wildfire alert system
GIS Buffering, Suitability Analysis	Conflict-sensitive wildlife conservation map
NLP, Geoparsing, Python	Contextual geo-tagging system
IoT, ML, GEE, Python	Water-efficient irrigation planner

Fairlearn, SHAP, Python	Ethical geo-AI policy checker
Python, Folium, GIS Tools	Law enforcement crime density map
SVM, GDAL, GIS Toolkits	Terrain intelligence system
LSTM, RNN, ArcGIS Time Series	Smart urban planning simulation
NLP + GeoCoordination	Smart public feedback map for planning
QGIS, SVM, Feature Classification	Groundwater availability map
NDVI, Thermal Indices, ML	Early heatwave alert and city planning
ArcGIS, Python, Flow Direction Tools	Watershed boundary delineation
OpenCV, CNN, ArcGIS	River boundary extraction tool
Image Processing, CNN	Preventive infrastructure audit
Chlorophyll Index, Image Classification	Lake ecosystem management tool
Python, Keras, QGIS, OpenCV	Accurate land cover classification model
GIS, Random Forest, ArcMap	Geo-risk alert system
AI Image Segmentation, DeepLab	Marine waste monitoring system
Object Detection, Python, GeoAI	Maritime surveillance system
QGIS, Python, Multilayer Maps	Multi-hazard decision support tool
Data Fusion, ML Pipelines	Precision forestry dashboard
Image Segmentation, Python, GEE	Maritime pollution monitor
UNet, CNN, Change Detection	Disaster impact assessment tool
NDWI, Python, ArcGIS	Smart aquaculture site selector
ML Models, GIS, Python	Water-saving agricultural tool
YOLOv7, CNN, Image Processing	Automated railway inspection system
Data Fusion, OpenCV, ML	Real-time farm monitoring dashboard
Ethereum, QGIS, IPFS	Tamper-proof land registry system
Object Detection + Blurring Techniques	Privacy-compliant image masking tool
Visualization Dash, ML	Policy-level geospatial impact reports
GIS, Multi-Criteria Decision Analysis	Smart green energy planning
Blockchain, GIS, Smart Contracts	Transparent land registration system
ML Regression, NDWI	Smart water monitoring map
OSM, GIS, OpenCV	Automated asset tagging and tracking
ML + Temporal Pattern Recognition	Decision system for multi-season farming
QGIS, Raster Tools	Environment-sensitive road planning
IoT, GEE, Python	Automated irrigation planner
Autoencoders, PCA, PyTorch	Storage-efficient satellite data system
CNN, OpenCV, YOLOv8	Smart pesticide application planner
Python, Fusion ML, GIS	Smart zoning and noise mitigation

Random Forest, QGIS, Pandas	Precision farming decision tool
Change Detection, ML, OpenCV	Mining violation tracking tool
Deep Learning, GeoAI	Intelligent mine zone monitor
Image Processing, ML	Remote leakage detection system
GEE, Python, Time-Series Plots	Climate impact assessment tool
ML + Remote Sensing	Land fertility mapping
RUSLE Model, QGIS, GeoAI	Soil erosion prediction tool
ML Regression Models, GEE	Precision agriculture input
Deep Learning, ArcGIS, Roof Detection	City-level solar optimization tool
LSTM, Prophet, GEE	Vegetation prediction for farming
GEE, Pandas, Visualization Tools	Crop cycle visualization tool
ML, GIS, GeoHeatMap	Health department risk forecast map
Fusion Algorithms, GPR Toolkit	Archaeological site enhancement
GEE, Python, Jupyter	Hydrological pattern analytics
NLP + Location Mining, Python	Tourism planning tool
YOLO, SSD, OpenCV	Traffic intelligence solution
DBSCAN, Folium, Pandas	Demand-responsive transit planner
Fusion Algorithms, Python, GIS	Efficient layered forest surveillance system
Python, GDAL, Rasterio, ArcGIS	UHI maps for climate planning
GIS, ML, Flood Simulation	Urban flood alert dashboard
NDVI, Image Differencing	Tree cover change visualizer
QGIS, Dashboards, Pandas	Environment scorecard per city
Time-Series ML, GEE, GIS	Urbanization analysis dashboard
GIS, Noise Modeling Toolkit	Smart city zoning map for noise levels
UNet, CNN, Raster tools	Map-based infrastructure extractor
Image Geometry, OpenCV	Rooftop solar mapping optimizer
Spatio-Temporal ML, QGIS	Predictive public health planner
NDWI, GEE, Python	Water availability predictor
Python, GEE, Satellite Toolkits	Eco-sensitive zone identifier

Sl. No	Sub-Domain	Project Area	Objective	Dataset
BIG001	AI in Genetic Counseling	Risk Assessment Tool from Pedigree + SNP Input	Estimate inheritance risk of diseases	Simulated Family Trees, OMIM
BIG002	AI in Personalized Nutrition	AI-based Nutrigenomics Recommender System	Suggest diet plans based on genetic susceptibility and metabolism	Nutrigenomics Databases
BIG003	AI in Prenatal Genomics	Genetic Abnormality Prediction from Fetal Genome	Detect high-risk abnormalities like Down Syndrome from fetal DNA	NIPT Datasets, Simulated FASTQ
BIG004	AI in Prenatal Screening	Image + Genomic Based Risk Screening for Congenital Disorders	Integrate ultrasound + maternal blood DNA data	Ultrasound Image DB + NIPT
BIG005	AI in Telemedicine Genomics	Personalized Drug Dosage Recommendation using Genomic	Adjust dosage for drugs like Warfarin based on CYP450 genotype	PharmGKB, SNPedia
BIG006	AI-Powered Gene Synthesis	Codon Optimization using Reinforcement Learning	Optimize gene sequences for improved expression in synthetic biology	Codon Usage Tables, GeneDB
BIG007	AI-Powered PCR Optimization	Predict Primer Performance using ML Models	Learn optimal primer combinations for PCR efficiency	PrimerDB, PCR Product Logs
BIG008	Antimicrobial Resistance	ML Model for Predicting Antibiotic Resistance Genes	Detect AMR genes from bacterial genome sequences	CARD, PATRIC
BIG009	Biocuration Automation	NLP-Based Tool to Annotate Genomic Databases	Automatically populate gene annotations from new research papers	PubMed, GenBank
BIG010	Bioimage Informatics	Classify Microscopy Cell Images using Deep Learning	Identify cell states or types from labeled microscopy images	BBBC (Broad Bioimage Benchmark)
BIG011	Biomarker Identification	AI-based Biomarker Discovery for Breast Cancer	Detect genes with diagnostic/prognostic significance	TCGA-BRCA Dataset
BIG012	Biomedical AI Chatbot	Genomics-Based Clinical Assistant Chatbot	Answer clinical genetic queries based on SNP, disease, and risk data	OMIM, SNPedia, ClinVar
BIG013	Biomedical Ethics + AI	Detect Ethical Risks in AI Trained on Biogenomic Data	Analyze bias and fairness in AI predictions from human genetic data	OpenSNP, 1000 Genomes
BIG014	Biomedical Graph Neural Nets	Predict Protein-Protein Interactions using GNNs	Learn interaction patterns from sequence and structure features	STRING, BioGRID
BIG015	Biomedical Named Entity Rec.	Extract Gene, Protein, and Drug Names from Research Papers	Apply NLP to annotate biomedical texts	PubMed Abstracts, BioCreative
BIG016	Biomedical Text Mining	Automatic Gene-Disease Relation Extraction from Literature	Extract gene-disease pairs using NLP	PubMed Central, OMIM
BIG017	Bio-NLP	Named Entity Recognition for Gene-Drug-Phenotype Extraction	Extract biomedical triples from research papers	BioCreative V, PubTator
BIG018	Cancer Immunogenomics	Predict Tumor Immune Infiltration using Genomics + Histology	Quantify immune cell types in tumor microenvironment	TCGA, IHC Images
BIG019	Cancer Neoantigen Prediction	Predict Patient-specific Tumor Neoantigens	Identify neoantigens for personalized cancer vaccines	TCGA, HLA typing data
BIG020	Clinical Trial Genome Match	AI Tool to Match Patients to Genomic Clinical Trials	Recommend trials based on mutation + HLA profile	ClinicalTrials.gov + Genomic Profiles
BIG021	Comparative Genomics	Genome Comparison of Two Closely Related Species	Identify conserved and variable regions in genome pairs	UCSC Genome Browser, NCBI Genomes
BIG022	Comparative Proteomics	Protein Sequence Clustering using K-Means	Cluster proteins into functional families based on sequence similarity	UniProtKB, SwissProt
BIG023	Computational Pharmacogenomics	Predict Drug Response from Genomic Profile	Estimate drug response variations based on mutations	GDSC, TCGA
BIG024	CRISPR Off-Target Detection	Predict Off-Target Sites for CRISPR Editing	Detect unintended genome editing regions	CRISPOR, Off-Spotter
BIG025	CRISPR-Cas9	Guide RNA Design Tool for Gene Editing	Predict high-efficiency gRNA sequences for CRISPR editing	CRISPRscan, E-CRISP
BIG026	Deep Genomics	Mutation Impact Prediction Using Deep Learning	Predict functional consequences of genomic mutations	ClinVar, Ensembl
BIG027	Deep Variant Calling	Neural Network-based Variant Caller for Next-Gen Sequencing	Replace traditional variant calling with CNN	Illumina BAM Files, GIAB
BIG028	Digital Pathology + Genomics	Integrating Histopathology & Genomics for Tumor Grading	Combine tissue image features with genomics for improved	TCGA (WGS + WSI Images)
BIG029	Digital Twin for Biology	Simulate a Virtual Twin of Human Metabolism	Create a software model of human biology for what-if simulations	Recon3D, MetaNetX
BIG030	Disease Variant Mapping	Identify SNPs Linked to Inherited Disorders	Analyze genetic variants responsible for diseases	1000 Genomes Project
BIG031	DNA Barcoding & Classification	Plant or Animal Species Classification using DNA Barcodes	Identify organisms from short DNA sequences	BOLD Systems, NCBI GenBank
BIG032	Drug Discovery	Virtual Drug Screening for Target Proteins	Screen compounds for drug-likeness against protein targets	ZINC, PubChem
BIG033	Drug Resistance Prediction	Predict Resistance to Cancer Drugs from Mutation Profiles	Analyze tumor sequencing to predict likely non-responders	TCGA, GDSC
BIG034	Drug-Target Interaction	Predict Drug-Protein Binding Affinity using Deep Learning	Model interaction strength between drug molecules and proteins	DAVIS, KIBA, BindingDB
BIG035	Epigenetic Biomarker Discovery	Early Detection of Alzheimer's from DNA Methylation Profiles	Discover differentially methylated regions in early-stage AD	GEO Datasets (Brain Tissue)

BIG036	Epigenetic Clock Modeling	Age Prediction from DNA Methylation Data	Estimate biological age using methylation markers	Horvath Clock Dataset, GEO
BIG037	Epigenomics	DNA Methylation Pattern Classification	Predict disease status from methylation data	TCGA-Epigenomic Datasets
BIG038	Epitranscriptomics	Detecting m6A RNA Methylation Sites Using ML	Predict methylation marks from RNA sequence context	RMBase, McT-DB
BIG039	Evolutionary Genomics	Visualizing Gene Gain/Loss Across Species	Track gene family expansions or contractions evolutionarily	Ensembl Compara, OrthoDB
BIG040	Functional Genomics	Predict Gene Function via Protein Domain Patterns	Classify unknown genes using protein family and domain similarity	InterPro, Pfam
BIG041	Gene Expression Analysis	Cancer Classification using Gene Expression Data	Classify cancer types using microarray gene expression profiles	TCGA, GEO
BIG042	Gene-Disease Mapping	AI Model to Link Genes to Rare Genetic Diseases	Learn associations between poorly annotated genes and rare diseases	OMIM, GeneCards
BIG043	Genome Annotation	Gene Prediction in Prokaryotic Genomes	Identify gene regions and coding sequences in bacterial genomes	GenBank, NCBI
BIG044	Genome Assembly	Develop a De Novo Genome Assembly Pipeline	Assemble whole genome from raw reads without reference genome	Nanopore/Illumina FASTQ
BIG045	Genome Compression	Lossless Compression Algorithm for FASTA Files	Reduce genome file size while preserving data integrity	Human Genome FASTA
BIG046	Genome Ethics & Privacy	Genomic Data Privacy Risk Analyzer	Assess re-identifiability risk of genomic datasets	OpenSNP, Genome Simulations
BIG047	Genome Sequencing	DNA Sequence Alignment using Smith-Waterman Algorithm	Align DNA sequences to reference genomes	FASTA Samples
BIG048	Genome-Wide Association	GWAS-based Trait Discovery in Maize or Arabidopsis	Link genomic variants with crop yield or flowering traits	Panzea (Maize), 1001 Genomes
BIG049	Genome-Wide Methylation AI	Deep Learning Model for Classifying Methylation Patterns	Use CNN on methylation array data to classify normal vs. cancer	TCGA 450k Methylation
BIG050	Genomic Data Mining	Frequent Pattern Mining in Genetic Variants	Discover co-occurrence of mutation patterns in genome sequences	dbSNP, GenBank
BIG051	Genomic Signal Processing	Detecting Exon-Intron Boundaries using Signal Processing	Use DSP techniques to identify coding regions in DNA	GenBank DNA Sequences
BIG052	Genomic Surveillance	Tracking Variants of Concern (e.g., SARS-CoV-2)	Identify and track new variants from genomic data	GISAID, Nextstrain
BIG053	Genomic Visualization	Interactive Genome Browser for Plant Genomes	Visualize and explore gene locations in crop plants	Ensembl Plants, Gramene
BIG054	Genomics + Blockchain	Secure Medical Genomic Records with Blockchain	Ensure tamper-proof genomic reports and sharing between institutions	Synthetic Genomic Logs
BIG055	Graph Genomics	Knowledge Graph Construction of Genes, Pathways, and Drugs	Model interactions among genes, diseases, and compounds	KEGG, DrugBank, OMIM
BIG056	Host-Pathogen Interactions	Predict Host Protein Targets of Viral Proteins (e.g., SARS-CoV-2)	Model viral-host protein interactions using ML	HPHDB, VirHostNet
BIG057	Immune Repertoire Profiling	T-cell/B-cell Receptor Diversity Estimation from NGS	Analyze diversity of immune repertoires	AIRR Data, MiXCR
BIG058	Immunogenomics	Predict HLA Binding for Neoantigen Discovery	Predict patient-specific neoantigens for immunotherapy	IEDB, TCGA
BIG059	Immunoinformatics	B-cell Epitope Prediction for Vaccine Design	Predict likely antigenic regions in pathogens	IEDB, NCBI Protein Sequences
BIG060	Integrative Omics	Multi-Omics Integration for Alzheimer's Disease	Correlate genomics, proteomics, metabolomics for disease markers	ADNI, GEO, PRIDE
BIG061	Interactive Genomic Dashboard	Multi-Omics Dashboard for Personalized Disease Profiling	Real-time dashboard for risk, pathways, and drug response	TCGA, PharmGKB
BIG062	Metabolic Network Modeling	Pathway Simulation of Human Metabolism	Model reactions and fluxes in metabolic pathways	KEGG, BioCyc
BIG063	Metabolic Pathway AI	Predict Missing Reactions in Incomplete Pathways	Fill gaps in biological pathways using ML	KEGG, MetaCyc
BIG064	Metabolomics	Metabolite Biomarker Identification for Diabetes	Discover metabolic signatures indicating early diabetes	HMDB, Metabolomics Workbench
BIG065	Metagenomics	Taxonomic Profiling of Microbial Communities	Identify microbial species in environmental samples	Human Microbiome Project, MG-RAST
BIG066	Microbiome Analysis	Classification of Gut Microbiome Species Using ML	Identify and classify microbes from 16S rRNA data	HMP, SILVA Database
BIG067	miRNA Analysis	miRNA Target Gene Prediction and Network Visualization	Predict target mRNAs and create regulatory network	miRTarBase, TargetScan
BIG068	Molecular Dynamics	Simulate Protein-Ligand Interaction in Solvent Environment	Model stability of drug binding in realistic molecular simulations	PDB, LigandDB
BIG069	mRNA Vaccine Design	AI-Based Antigen Target & Sequence Generator	Predict viral epitopes and optimize codons for mRNA vaccines	Viral Sequences (SARS, Zika)
BIG070	Multi-Omics Disease Network	Correlation Mapping from Genomics, Proteomics, and Metabolomics	Build disease network models based on multi-omics layers	GEO, PRIDE, TCGA
BIG071	Mutation Analysis	Cancer Mutation Hotspot Visualization	Map high-frequency mutations in oncogenes and tumor suppressors	COSMIC, TCGA

BIG072	Network Medicine	Disease Module Identification from Gene Networks	Discover modules of genes strongly related to a disease	DisGeNET, GeneMANIA
BIG073	NGS Quality Control	Build an NGS Preprocessing Pipeline	Automate trimming, filtering, and quality checks on NGS reads	FASTQ Datasets
BIG074	Pathogen Genomics	Bacterial Strain Typing and Resistance Gene Profiling from WGS	Differentiate closely related bacterial strains using WGS data	NCBI RefSeq, Enterobase
BIG075	Pathway Analysis	KEGG Pathway Enrichment Analysis from Gene List	Identify pathways affected by differentially expressed genes	KEGG, GeneCards
BIG076	Personalized Genomics	ML-Based Risk Score Calculator from SNP Data	Estimate disease risk from individual SNP profile	OpenSNP, SNPedia
BIG077	Personalized Oncology	Cancer Subtype Prediction from Multi-Omics Data	Integrate gene expression, methylation, and mutation data	TCGA (multi-omics)
BIG078	Phylogenetics	Phylogenetic Tree Construction from Mitochondrial DNA	Determine evolutionary relationships among species	NCBI, Mitochondrial Genomes
BIG079	Plant Epigenomics	Study Epigenetic Markers in Crops Under Stress	Analyze methylation patterns under drought or salt stress	Plant Methyloome Datasets
BIG080	Plant Genomics	Trait Prediction in Rice Genomes using GWAS	Discover associations between traits and SNPs in rice	Rice SNP-Seek DB, IRRI
BIG081	Population Genetics	Genome Diversity Visualization Across Populations	Study genetic diversity across different ethnic populations	1000 Genomes Project
BIG082	Population Genomics	Principal Component Analysis of Global Genomic Diversity	Visualize ancestry and diversity among world populations	1000 Genomes Project
BIG083	Precision Agriculture	Predict Disease Resistance Genes in Crops	Discover disease-resistant genes using genomics	Rice, Tomato Genome DB
BIG084	Protein Docking	Simulate Binding between Drug and Target Proteins	Visualize and analyze ligand binding poses	Protein Data Bank (PDB), DrugBank
BIG085	Protein Folding	AlphaFold-inspired Protein Structure Predictor	Predict 3D structure from amino acid sequence	PDB, UniProt
BIG086	Protein Structure	Protein Secondary Structure Prediction	Predict alpha helix/beta sheet regions in proteins	PDB, UniProt
BIG087	Protein-Protein Interaction	PPI Network Construction and Analysis	Build interaction graphs to discover protein hubs	STRING, BioGRID
BIG088	Rare Disease Mining	Identify Candidate Genes for Rare Diseases using Graph ML	Discover novel gene associations via gene interaction networks	Orphanet, DisGeNET
BIG089	Rare Mutation Visualization	Lollipop Plot Generator for Somatic Mutation Patterns	Visualize mutation frequency in coding genes using interactive plots	COSMIC, cBioPortal
BIG090	Real-time Pathogen Detection	Fast Pathogen Identification from Sequencing Reads	Use ML to classify pathogens from metagenomic data	MiniION/Nanopore + Public Databases
BIG091	RNA Editing Analysis	Detect and Visualize RNA Editing Events in Disease States	Identify editing hotspots in RNA for cancer/neuro disorders	REDportal, TCGA RNA-Seq
BIG092	RNA Structure Prediction	Visual Tool for RNA Secondary Structure Folding	Predict RNA stem-loop and pseudoknot formations	RNA STRAND, Rfam
BIG093	Single-cell Genomics	Cell Type Clustering from Single-Cell RNA-seq Data	Identify distinct cell populations in tissue samples	Human Cell Atlas, 10x Genomics
BIG094	SNP Effect Prediction	Predicting Functional Impact of Non-synonymous SNPs	Determine pathogenicity of amino acid-altering mutations	ClinVar, dbNSFP
BIG095	Splice Site Prediction	Predicting Exon-Intron Splice Sites using AI	Detect canonical splice junctions from genomic DNA	SpliceDB, Human Genome
BIG096	Synthetic Biology	Promoter Sequence Design Using Generative Models	Generate synthetic promoters with high transcriptional activity	E. coli, Yeast Promoter DB
BIG097	Synthetic Genome Design	Automated Design of Minimal Synthetic Bacterial Genome	Generate minimal gene sets needed for synthetic life	JCVI-syn3.0, Mycoplasma DB
BIG098	Transcript Isoform Prediction	Predicting Isoform Abundance from RNA-Seq	Estimate expression of different isoforms of a gene	GENCODE, ENCODE
BIG099	Transcriptome Isoform AI	Predict Gene Isoform Switching in Cancer	Detect isoform expression changes across tumor stages	TCGA SpliceSeq, GTEx
BIG100	Transcriptomics	RNA-Seq Data Analysis Pipeline	Analyze gene expression from transcriptome sequencing data	ENCODE, GEO RNA-Seq

Tools Used	Expected Outcome
Naive Bayes, Risk Models, Python	Clinical genomics risk estimator
AI Recommenders, ML, Dashboards	Personalized DNA-based diet advisor
SVM, XGBoost, Variant Callers	Non-invasive prenatal risk predictor
CNN + ML Ensemble	Combined screening decision support tool
Regression Models, Expert Systems	Genotype-based prescription advisor
RL Agents, Reward Models	Codon-optimized gene generator
Regression ML, BioPython, Deep	Intelligent primer design assistant
Random Forest, DeepAMR, Python	AMR gene prediction model
NLP, BERT, Rule-based Extraction	Semi-automated genome database updating
CNN, Keras, ImageNet Transfer Learning	Automated cell image classifier
ML, Feature Selection, R, Python	Biomarker prediction tool
LangChain, RAG, GPT APIs	AI-based genomic query assistant
SHAP, Fairlearn, Python	Responsible genomics AI validator
GraphSAGE, PyTorch Geometric	Deep learning PPI predictor
BERT, SciSpacy, NLTK	Biomedical literature annotation tool
BioBERT, SciBERT, SpaCy	Biomedical knowledge graph
BiLSTM-CRF, Hugging Face	Biomedical relationship extractor
ML, PathAI, Cytolytic Score Tools	Tumor immunity scoring tool
NetMHCpan, DeepHLApan	Personalized vaccine targets
Decision Trees, Knowledge Graphs	AI-assisted clinical trial matchmaker
Dot Plot, BLASTn, MUMmer	Comparative genomic alignment visualizer
Python, Scikit-learn, BioPython	Protein classification model
ML, Pharmacogenomic Pipelines	Precision medicine decision support
DeepCRISPR, Sequence Alignment Tools	Safer genome editing assistant
Python, ML, Sequence Rules	gRNA candidate prediction system
CNN, Keras, TensorFlow	Accurate variant effect predictor
DeepVariant, TensorFlow	High-accuracy SNP/INDEL caller
CNN, Genomics Fusion Models	Multimodal cancer diagnosis model
COBRA Toolbox, SBML	Personal digital twin for predictive health
PLINK, R, VCFtools	Disease-associated variant map
BLAST, SVM, BioPython	DNA barcode classification tool
AutoDock, PyMOL, Python	Drug candidate ranking system
Ensemble ML, Genomic Signature	Tumor-specific resistance predictor
GNNs, DeepChem, PyTorch	Predictive drug screening model
SVM, Random Forest, R	DNA methylation classifier for

ElasticNet, R, ML	DNA methylation-based age predictor
R (limma), Scikit-learn	Epigenetic disease classifier
CNN, BiLSTM, Python	Epigenetic RNA annotation model
Phylogenetics + Clustering Tools	Evolution tree of genomic functions
Decision Tree, ML, UniProt	Gene function classifier
Python, R, SVM, Scikit-learn	Automated cancer subtype classifier
Graph ML, NLP, TensorFlow	Gene-disease relation predictor
Genemark, Glimmer, Biopython	Annotated genome browser
SPAdes, Canu, Velvet	Contiguous genome sequence
Huffman, Arithmetic Coding, Python	Efficient DNA data compressor
k-Anonymity, ML, Python	Genomic privacy protection framework
Biopython, Python, C++	Optimized sequence alignment tool
GWAS Tools, Python, Plink	Marker-assisted trait prediction
CNN, Heatmaps, TensorFlow	Disease-specific methylation classifier
Apriori, MLlib, Python	Frequent genomic pattern miner
MATLAB, FFT, Python DSP	Improved gene boundary detection
Sequence Clustering, ML, Phylogenetics	Real-time variant monitoring dashboard
JBrowse, HTML5, D3.js	Web-based genome browser
Ethereum, IPFS, Solidity	Secure genomic record system
Neo4j, RDF, OWL, BioKG	Interactive biomedical knowledge graph
CNN, Graph Embeddings, BioPython	Host-virus interaction predictor
Repertoire Analysis Tools, R	Immune diversity plot
NetMHC, DeepHLApan	Personalized cancer immunotherapy model
ML, IEDB Tools, Epitope Scoring	Immune epitope prediction model
ML Pipelines, Feature Fusion Techniques	Systems biology Alzheimer model
Dash, Streamlit, D3.js	Personalized genomics dashboard
COBRA Toolbox, MATLAB	Dynamic metabolic model
Graph AI, Pathway Prediction ML	Pathway completion recommender
ML, PCA, R, Python	Metabolite biomarker panel
QIIME2, MetaPhlAn, Python	Microbial diversity profile
QIIME2, Python, Random Forest	Automated gut microbe classifier
Cytoscape, R, Python	miRNA-mRNA interaction network
GROMACS, VMD	Protein-drug stability visualization
Deep Learning, IEDB, Codon AI	mRNA vaccine design assistant
Multi-omics AI Pipelines	Systems medicine knowledge graph
Python, R, MutationMapper	Cancer mutation heatmap

NetworkX, Cytoscape, ML	Modular gene-disease network visualizer
FastQC, Trimmomatic, Bash	End-to-end NGS data preprocessor
MLST, K-mer Analysis, Python	Real-time pathogen surveillance tool
ClusterProfiler (R), Python	Gene-pathway relation mapper
Python, Logistic Regression	Personalized genetic health dashboard
XGBoost, PCA, R	Precision cancer subtype classifier
MEGA, Clustal Omega, PhyloT	Tree visualizing evolutionary divergence
R (ChAMP), Python	Epigenetic biomarker discovery in plants
GWAS Tools, Python, Plink	Smart agriculture genomic assistant
PCA, STRUCTURE, Python, R	Population variation visualization
R (PCA), Python	Population structure visualization
BLAST, Python, Gene Ontology Tools	Crop genomics assistant
AutoDock Vina, PyMOL	Protein-drug interaction simulation
PyRosetta, ML, Torsion Models	Protein 3D modeling tool
Deep Learning, Keras	Protein folding insight system
Cytoscape, NetworkX	Disease-related interaction network
Graph Convolutional Networks (GCNs)	Rare disease prioritization tool
Plotly, Python, OncoPrinter	Custom somatic mutation visualization tool
Kraken2, MetaMLST, Python	Real-time infectious disease monitoring system
GATK, RNA-Editing Pipeline	Interactive RNA editing site map
RNAfold, NUPACK, Python	RNA secondary structure visualizer
Seurat (R), Scanpy (Python)	Cellular diversity map
PolyPhen2, SIFT, Python	SNP effect prediction report
RNN, BiLSTM, Python	Improved gene annotation tool
GANs, LSTM, Python	Synthetic promoter sequence generator
Systems Biology Tools, ML	Synthetic genome blueprint
Kallisto, Salmon, R	Isoform-level expression profiling
LSTM, Time-Series ML	Transcript-level cancer markers
STAR, DESeq2, Python, R	Differential gene expression report