INSTITUTION'S INNOVATIONS COUNCIL DJSCE

DJ InIT. AI
Devising Intelligence for Tomorrow

S.V.K.M.'S DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
CREATING WINGINEERS

D2K 3.0

PROBLEM STATEMENT 1

SMART TASK MANAGEMENT DASHBOARD FOR FACILITY TEAMS

PART 1

PROBLEM STATEMENT

FACILITY MANAGEMENT TEAMS HANDLE A HIGH VOLUME OF DAILY TASKS, MAKING IT CRUCIAL TO PREDICT, MONITOR, AND OPTIMIZE TASK SCHEDULING. MISSED OR DELAYED TASKS CAN DISRUPT OPERATIONS, IMPACTING EFFICIENCY AND RESOURCE ALLOCATION.

YOUR CHALLENGE IS TO DEVELOP A REAL-TIME, INTERACTIVE DASHBOARD THAT PROVIDES ACTIONABLE INSIGHTS ON TASK COMPLETION PATTERNS. THE DASHBOARD SHOULD INCLUDE DATA VISUALIZATIONS, TREND ANALYSIS, AND PREDICTION MODELS TO HELP FACILITY TEAMS MAKE INFORMED DECISIONS.

OBJECTIVES:

PREDICT TASK MISSES: ANALYZE HISTORICAL TASK DATA AND CONTEXTUAL FEATURES (TASK TYPE, WORKLOAD, RESOURCE AVAILABILITY) TO IDENTIFY PATTERNS OF MISSED TASKS.

INSIGHTFUL VISUALIZATIONS: DEVELOP AN INTERACTIVE DASHBOARD WITH HEATMAPS, TREND GRAPHS, AND RISK INDICATORS.

SCALABLE & USABLE DESIGN: ENSURE THE DASHBOARD IS USER-FRIENDLY, HANDLES LARGE DATASETS, AND UPDATES IN REAL-TIME.

EXPECTED SOLUTION

1. DATA PROCESSING & EXPLORATION

PREPROCESS THE DATASET (HANDLE MISSING VALUES, STANDARDIZE TASK STATUSES).

FEATURE ENGINEERING (DERIVE ATTRIBUTES LIKE TASK FREQUENCY, WORKLOAD DISTRIBUTION, SEASONAL PATTERNS).

HANDLE CLASS IMBALANCES USING TECHNIQUES LIKE SMOTE (SYNTHETIC MINORITY OVER-SAMPLING TECHNIQUE).

INSTITUTION'S INNOVATIONS COUNCIL DJSCE

DJ InIT. AI
Devising Intelligence for Tomorrow

S.V.K.M.'s DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
1916 1994
CREATING WINGINEERS

D2K 3.0

PROBLEM STATEMENT 1

2. INSIGHTFUL VISUALIZATIONS: DEVELOP AN INTERACTIVE DASHBOARD WITH HEATMAPS, TREND GRAPHS, AND RISK INDICATORS.
3. SCALABLE & USABLE DESIGN: ENSURE THE DASHBOARD IS USER-FRIENDLY, HANDLES LARGE DATASETS, AND UPDATES IN REAL-TIME.

EXPECTED SOLUTION:

1. DATA PROCESSING & EXPLORATION
   - PREPROCESS THE DATASET (HANDLE MISSING VALUES, STANDARDIZE TASK STATUSES).
   - FEATURE ENGINEERING (DERIVE ATTRIBUTES LIKE TASK FREQUENCY, WORKLOAD DISTRIBUTION, SEASONAL PATTERNS).
   - HANDLE CLASS IMBALANCES USING TECHNIQUES LIKE SMOTE (SYNTHETIC MINORITY OVER-SAMPLING TECHNIQUE).
2. ML-BASED PREDICTIVE MODELING
   - IMPLEMENT CLASSIFICATION MODELS (LOGISTIC REGRESSION, RANDOM FOREST, XGBOOST) TO PREDICT TASK MISSES.
   - EVALUATE MODELS USING F1-SCORE, PRECISION, RECALL, AND ROC-AUC.
3. INTERACTIVE DASHBOARD FEATURES
   - TASK MISS HEATMAP: A MONTHLY HEATMAP HIGHLIGHTING HIGH-RISK TIME SLOTS.
   - TASK TREND ANALYSIS: GRAPHS SHOWING PATTERNS OVER TIME (DAILY, WEEKLY, MONTHLY).

INSTITUTION'S INNOVATIONS COUNCIL DJSCE

DJ InIT. AI
Devising Intelligence for Tomorrow

S.V.K.M.'S DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
CREATING WINGINEERS

D2K 3.0

PROBLEM STATEMENT 2

EVENT DISCOVERY PLATFORM CHALLENGE

PART 1

BACKGROUND:

IN TODAY'S FAST-PACED DIGITAL WORLD, GENZ USERS ARE INUNDATED WITH ENTERTAINMENT CHOICES BUT LACK A UNIFIED PLATFORM THAT SEAMLESSLY CURATES EVENTS MATCHING THEIR INTERESTS. CURRENT EVENT DISCOVERY PLATFORMS ARE FRAGMENTED AND FAIL TO PROVIDE TAILORED RECOMMENDATIONS THAT INTRODUCE USERS TO NEW AND ENGAGING EXPERIENCES.

THE CHALLENGE IS TO BUILD **TUFANTICKET**, AN AI-POWERED EVENT DISCOVERY AND RECOMMENDATION SYSTEM THAT ENHANCES PERSONALIZATION AND PROVIDES INTELLIGENT INSIGHTS FOR EVENT ORGANIZERS. THE SOLUTION SHOULD FOCUS ON LEVERAGING MACHINE LEARNING ALGORITHMS TO GENERATE RECOMMENDATIONS, PREDICT EVENT TRENDS, AND SUGGEST NEW EVENT IDEAS.

EXPECTED SOLUTION:

PERSONALIZED EVENT DISCOVERY ENGINE

DEVELOP AN AI-DRIVEN RECOMMENDATION SYSTEM LEVERAGING:

- USER PREFERENCES AND HISTORICAL BOOKING DATA
- LOCATION PROXIMITY AND ACCESSIBILITY
- SOCIAL CONNECTIONS AND TRENDING EVENTS
- EXPLORATION FACTOR TO INTRODUCE NEW EXPERIENCES
- CLUSTERING ALGORITHMS: SEGMENTS USERS BASED ON BEHAVIOR FOR MORE PRECISE RECOMMENDATIONS

INSTITUTION'S INNOVATIONS COUNCIL DJSCE

DJ InIT. AI
Devising Intelligence for Tomorrow

S.V.K.M.'S DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
CREATING WINGINEERS

D2K 3.0

PROBLEM STATEMENT 2

ORGANIZER INTELLIGENCE SYSTEM

AI-POWERED ANALYTICS TO ENHANCE EVENT DISCOVERY, INCLUDING:

- SEASONAL POPULARITY TRENDS OF ARTISTS AND EVENTS
- TICKET SALES VELOCITY PROJECTION
- PRICING STRATEGIES FOR MAXIMUM ATTENDANCE, OPTIMIZED THROUGH REAL-TIME MARKET FEEDBACK
- PREDICTING TICKET SALES AND EVENT POPULARITY
- SENTIMENT ANALYSIS: GAUGES PUBLIC OPINION TO INFORM PRICING AND EVENT IDEA GENERATION
- ANOMALY DETECTION: IDENTIFIES UNUSUAL TRENDS IN TICKET SALES, SIGNALING OPPORTUNITIES OR ISSUES

EVALUATION CRITERIA:

- AI IMPLEMENTATION (50%)
  - EFFECTIVENESS OF THE RECOMMENDATION ENGINE
  - ACCURACY IN PERSONALIZATION AND EXPLORATION FACTORS
  - EVENT TREND FORECASTING AND IDEA GENERATION
- TECHNICAL IMPLEMENTATION (30%)
  - CODE QUALITY AND ARCHITECTURE
  - PERFORMANCE OPTIMIZATION
  - API DESIGN AND INTEGRATION
- INNOVATION (20%)
  - UNIQUE SOLUTIONS ENHANCING USER EXPERIENCE
  - ENCOURAGEMENT FOR FEATURES BEYOND CORE REQUIREMENTS

INSTITUTION'S INNOVATIONS COUNCIL DJSCE

DJ InIT. AI
Devising Intelligence for Tomorrow

S.V.K.M.'S DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
CREATING WINGINEERS

D2K 3.0

PROBLEM STATEMENT 2

DATASETS:

PARTICIPANTS CAN USE PUBLICLY AVAILABLE DATASETS FOR MODEL TRAINING:

- EVENT RECOMMENDATION DATA - HTTPS://WWW.KAGGLE.COM/COMPETITIONS/EVENT-RECOMMENDATION-ENGINE-CHALLENGE/DATA
- USER EVENT DATA FOR AI MODELS - HTTPS://WWW.KAGGLE.COM/DATASETS/GSPMOREIRA/NEWS-PORTAL-USER-INTERACTIONS-BY-GLOBOCOM

DELIVERABLES:

- MACHINE LEARNING MODEL
  - RECOMMENDATION SYSTEM PREDICTING USER-PREFERRED EVENTS
  - TREND ANALYSIS MODULE FORECASTING EVENT POPULARITY AND PRICING STRATEGIES
  - OPTIMIZED DYNAMIC PRICING STRATEGIES THROUGH REAL-TIME MARKET FEEDBACK
- MODEL EVALUATION & PERFORMANCE METRICS
  - EXPLAINABILITY OF AI RECOMMENDATIONS
  - MODEL PERFORMANCE REPORTS (ACCURACY, PRECISION, RECALL, ETC.)
- DOCUMENTATION
  - MODEL TRAINING PIPELINE DOCUMENTATION
  - TECHNICAL ARCHITECTURE DIAGRAMS
  - USER FLOW MAPS FOR RECOMMENDATION SYSTEMS
- PRESENTATION
  - 5-MINUTE DEMONSTRATION OF THE MODEL'S RECOMMENDATIONS
  - SHOWCASE OF AI-POWERED TREND FORECASTING

INSTITUTION'S INNOVATIONS COUNCIL DJSCE

DJ InIT. AI
Devising Intelligence for Tomorrow

S.V.K.M.'s DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
CREATING WINGINEERS

D2K 3.0

PROBLEM STATEMENT 3

AI AGENT MARKETPLACE – BUILD YOUR OWN AI WORKFLOWS

BACKGROUND:

THE AI REVOLUTION IS HERE, BUT MOST AI TOOLS ARE BUILT FOR SINGULAR, RIGID USE CASES. BUSINESSES, STUDENTS, AND PROFESSIONALS LACK A FLEXIBLE WAY TO CREATE CUSTOM AI WORKFLOWS TAILORED TO THEIR NEEDS.

AT THE SAME TIME, AI DEVELOPMENT IS FRAGMENTED. DEVELOPERS BUILD TASK-SPECIFIC AI MODELS, BUT THERE IS NO MODULAR WAY TO CONNECT MULTIPLE AI AGENTS INTO A SEAMLESS WORKFLOW THAT ADAPTS TO DIFFERENT INDUSTRIES.

WHAT IF WE COULD REDEFINE HOW AI AGENTS WORK TOGETHER? INSTEAD OF STATIC MODELS, IMAGINE A MARKETPLACE OF AI AGENTS, WHERE USERS CAN DRAG, DROP, AND CUSTOMIZE AI-POWERED WORKFLOWS FOR THEIR SPECIFIC DOMAIN—WHETHER IT'S MARKETING, EDUCATION, FINANCE, OR CORPORATE PRODUCTIVITY.

PART 1:

PARTICIPANTS MUST DESIGN AND DEVELOP MULTIPLE AI AGENTIC WORKFLOWS. THESE WORKFLOWS WILL BE USED AS BUILDING BLOCKS DURING THE HACKATHON.

- BUILD A FEW AI AGENTIC WORKFLOWS THAT ALIGN WITH REAL-WORLD USE CASES.
- ENSURE THESE WORKFLOWS ARE MODULAR, MEANING THEY CAN BE REUSED AND COMBINED LATER.
- EACH WORKFLOW SHOULD FUNCTION INDEPENDENTLY AND INTEGRATE SEAMLESSLY WITH OTHERS.
- USE AI TECHNIQUES LIKE RAG-BASED RETRIEVAL AND AGENT-BASED DECISION-MAKING TO ENHANCE WORKFLOW INTELLIGENCE.

INSTITUTION'S INNOVATIONS COUNCIL DJSCE

DJ InIT. AI
Devising Intelligence for Tomorrow

S.V.K.M.'S DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
CREATING WINGINEERS

D2K 3.0

PROBLEM STATEMENT 3

EXAMPLE AI WORKFLOWS TO BUILD

- MARKETING AGENCY
  SEO OPTIMIZER → COMPETITOR WATCHDOG → PRODUCT RECOMMENDATION AI → POST CREATOR → SMART EMAIL MANAGER
- CORPORATE PRODUCTIVITY
  MEETING SUMMARIZER → SMART EMAIL MANAGER → COMPETITOR WATCHDOG → CUSTOMER FEEDBACK ANALYZER
- LEGAL & COMPLIANCE
  CONTRACT SUMMARIZER → AI RESEARCH ASSISTANT → REGULATORY COMPLIANCE WATCHDOG → SMART EMAIL MANAGER

THESE WORKFLOWS WILL BE READY AND FUNCTIONAL BEFORE THE HACKATHON DAY, ENSURING THAT PARTICIPANTS HAVE A STRONG FOUNDATION TO BUILD ON.

(NOTE : YOU CAN CREATE AND ADD WORKFLOWS IN THE MARKETPLACE ACCORDING TO YOUR OWN IMAGINATION, BE CREATIVE)

INSTITUTION'S INNOVATIONS COUNCIL DJSCE

DJ InIT. AI
Devising Intelligence for Tomorrow

S.V.K.M.'S DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
CREATING WINGINEERS

D2K 3.0

PROBLEM STATEMENT 4

AI-POWERED FINANCIAL STATEMENT ANALYSIS

PART 1

BACKGROUND:

IN THE FAST-PACED WORLD OF INVESTMENT BANKING AND PRIVATE EQUITY, FINANCIAL ANALYSTS SPEND COUNTLESS HOURS MANUALLY REVIEWING AND ANALYZING FINANCIAL STATEMENTS OF PRIVATE COMPANIES. THESE DOCUMENTS INCLUDE COMPANY INFORMATION, BALANCE SHEETS, PROFIT AND LOSS STATEMENTS, CASH FLOW STATEMENTS, AND EXTENSIVE NOTES TO ACCOUNTS.

ANALYZING THESE STATEMENTS REQUIRES DEEP FINANCIAL EXPERTISE AND ATTENTION TO DETAIL TO EXTRACT KEY INSIGHTS. HOWEVER, THE CURRENT PROCESS IS TIME-CONSUMING, REPETITIVE, AND PRONE TO HUMAN ERRORS. ANALYSTS MUST MANUALLY SIFT THROUGH VAST AMOUNTS OF DATA, IDENTIFY TRENDS, AND GENERATE FINANCIAL ASSESSMENTS, WHICH SLOWS DOWN DECISION-MAKING AND INCREASES OPERATIONAL COSTS.

THE CHALLENGE IS TO BUILD AN AI-POWERED SYSTEM THAT AUTOMATES THE EXTRACTION AND ANALYSIS OF FINANCIAL STATEMENTS. THE SOLUTION SHOULD LEVERAGE ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING TO PROCESS COMPLEX FINANCIAL DATA EFFICIENTLY, DELIVERING REAL-TIME, ACCURATE, AND ACTIONABLE INSIGHTS.

INSTITUTION'S INNOVATIONS COUNCIL DJSCE

DJ InIT. AI
Devising Intelligence for Tomorrow

S.V.K.M.'s DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
CREATING WINGINEERS

D2K 3.0
PROBLEM STATEMENT 4

EXPECTED SOLUTION

AI-DRIVEN FINANCIAL STATEMENT ANALYSIS WITH ADVANCED NLP

THE SOLUTION SHOULD AUTOMATE THE EXTRACTION AND INTERPRETATION OF FINANCIAL DATA FROM BALANCE SHEETS, INCOME STATEMENTS, CASH FLOW STATEMENTS, AND ACCOMPANYING NOTES.

NLP CAPABILITIES SHOULD ALLOW THE SYSTEM TO:

- READ AND EXTRACT RELEVANT FINANCIAL DATA FROM PDFS, SPREADSHEETS, AND SCANNED DOCUMENTS
- UNDERSTAND AND INTERPRET ACCOUNTING TERMS AND POLICIES WITHIN FINANCIAL REPORTS
- GENERATE SUMMARY REPORTS WITH KEY FINDINGS

AI-POWERED INSIGHTS

- KEY FINANCIAL RATIOS (E.G., PROFITABILITY, LIQUIDITY, SOLVENCY)
- TREND ANALYSIS ACROSS MULTIPLE FINANCIAL PERIODS

CUSTOMIZATION & INTEGRATION CAPABILITIES

- API INTEGRATION WITH FINANCIAL DATABASES AND ACCOUNTING SOFTWARE
- CONFIGURABLE REPORT TEMPLATES

EVALUATION CRITERIA

- TECHNICAL IMPLEMENTATION (30%)
- AI IMPLEMENTATION (40%)
- UI/UX DESIGN (10%)
- INNOVATION & BUSINESS IMPACT (20%)

DELIVERABLES

- AI-POWERED ANALYSIS PLATFORM
- FINANCIAL DATA EXTRACTION & PROCESSING SYSTEM
- DOCUMENTATION & DEMONSTRATION

INSTITUTION'S INNOVATIONS COUNCIL DJSCE

DJ InIT. AI
Devising Intelligence for Tomorrow

S.V.K.M.'s DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
CREATING WINGINEERS

D2K 3.0

PROBLEM STATEMENT 4

RESOURCES:

- HTTPS://CORPORATEFINANCEINSTITUTE.COM/RESOURCES/ACCOUNTING/FINANCIAL-STATEMENTS-EXAMPLE-AMAZON-CASE-STUDY/
- INPUT SAMPLE DOC FOR SUMMARY REPORT: HTTPS://DRIVE.GOOGLE.COM/FILE/D/1330DGGANGZDOE5OKYP-U4M6EXANIUM5D/VIEW?USP=SHARING
- FINANCIAL RATIOS : HTTPS://DOCS.GOOGLE.COM/DOCUMENT/D/1JDZOV5TQYOJTXOPZXQAZWBKEBZMD5RKN/EDIT?USP=SHARING&OUID=107653228728646145018&RTPOF=TRUE&SD=TRUE
- OUTPUT DOC EXAMPLE HTTPS://DRIVE.GOOGLE.COM/FILE/D/1_BIW10LOUJLVO9I6BHEPASTDPS0C5F59/VIEW?USP=SHARING

FOLLOWING IS IMPORTANT FOR OUTPUT:

1. BUSINESS OVERVIEW
2. KEY FINDINGS, FINANCIAL DUE DILIGENCE
3. INCOME STATEMENT OVERVIEW
4. BALANCE SHEET OVERVIEW
5. ADJ EBITDA (IF DETAILED INFORMATION IS PROVIDED IN THE INPUT DOCUMENT ABOUT THIS THEN ANALYSE IT)
6. ADJ WORKING CAPITAL (IF DETAILED INFORMATION IS PROVIDED IN THE INPUT DOCUMENT ABOUT THIS THEN ANALYSE IT)