DEPARTMENT OF SOFTWARE ENGINEERING
Faculty of Computing & Information Technology (FCIT)
University of the Punjab, Lahore – PAKISTAN

FYDP-DSE

Department of Software Engineering

SEF22

https://pu.edu.pk/dse-fydp/

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FPSEF25X01
DermaAssist

Group members:
BSEF22M029: *SYED HUSSAIN AHMAD*, BSEF22M028: *ALI HAIDER*, BSEF22M036: *ABDULLAH SAANI*

Supervised by: Dr Muhammad Farooq

Abstract

We will build a web-based computer-vision system that scans skin using a webcam/camera in real time, detects and classifies common skin conditions (e.g., melanoma, benign nevus, eczema, psoriasis, acne, fungal infections), and presents likely diagnoses along with dermatologist-oriented guidance and references. The system will use state-of-the-art convolutional neural networks with transfer learning, optimized for real-time inference (in-browser or via a lightweight server). The app is intended as a decision-support tool for dermatologists, not a substitute for professional clinical diagnosis.

Tools & Technologies

- Python, TensorFlow / PyTorch, OpenCV, scikit-learn
- TensorFlow.js or ONNX (for browser inference)
- Frontend: React / plain JS + HTML/CSS, use getUserMedia for camera
- Backend: FastAPI or Flask (if using server-side)
- Docker for containerization, Git for version control, GitHub/GitLab for repo
- Optional: AWS / Heroku / DigitalOcean for hosting

DermaAssist

FYP · PUCIT 2022–2026 | Multimodal AI | Skin Disease Detection

A **multimodal deep learning framework** that fuses skin lesion images with structured clinical questionnaire data to identify 8 dermatological conditions and provide personalized precautionary guidance.

PROBLEM

Pakistan faces a severe dermatologist shortage. Most patients rely on unverified sources or wait weeks for appointments, leading to delayed diagnosis of potentially serious conditions like melanoma and basal cell carcinoma.

8

skin diseases covered — from acne to melanoma

MODEL ARCHITECTURE

- **Skin image** — Webcam / upload → **ResNet18 CNN** — Visual feature extraction
- **14 Clinical Qs** — Patient questionnaire → **Tabular MLP** — Anamnesis encoding
- **Late Fusion Classifier** — Disease + Precautions

CLASSIFIED CONDITIONS (8 LABELS)

Acne — Clogged pores / cysts	**Basal Cell Carcinoma** — Most common skin cancer
Eczema — Chronic dry, itchy skin	**Melanoma** — Dangerous pigment cancer
Psoriasis — Autoimmune scaly patches	**Rosacea** — Chronic facial redness
Urticaria — Allergic itchy welts	**Vitiligo** — Skin pigment loss

14-QUESTION CLINICAL INPUT (DCQ-14)

Onset duration | Sudden / gradual | Spreading? | Symptoms | Family history | Affected body part | Age | Gender | Skin type | Itch timing | Itch severity | Routine changes | Warmth / tender | Texture / fluid

Also considers **morphology** (macule, papule, plaque, pustule...), **shape** (linear, ring, clustered...), and **colour** (red, brown, white, black...) — all extracted from the image.

DATASET & EVALUATION

4+ — Lahore OPD hospitals	**8** — disease classes
0.83 — Cohen's κ inter-rater	**ResNet18** — backbone model

Images collected from dermatology OPDs with confirmed diagnoses. Each image annotated with disease label + full DCQ-14 clinical context by a verified dermatologist.

SYSTEM OUTPUT

- **Predicted disease name** with confidence score and probability distribution across all 8 classes
- **Precautionary measures** tailored to the predicted condition and patient-specific answers
- **Sensor diagnostics** — morphology, shape, and colour analysis from the uploaded image

TECH STACK

ResNet18 | PyTorch | Tabular MLP | Late Fusion | FastAPI | React + Vite | MongoDB | Google Colab (GPU) | Kaggle Datasets | Roboflow | Webcam / Upload

TEAM

Syed Hussain Ahmad · Abdullah Saani · Ali Haider

Supervisor: Dr. Muhammad Farooq | PUCIT, University of the Punjab

BSEF22M029 · BSEF22M036 · BSEF22M028

FYP · DSE · 2022–2026

FPSEF25X02

Chat-bot based Fitness Assistant

Group members:
BSEF22M013: ALEENA HASSAN, BSEF22M007: URWA TUL WUSQA, BSEF22M025: ADEEBA MAQBOOL, BSEF22M034: ZAHA ASHFAQ

Supervised by: Dr Muhammad Farooq

Abstract

The rapid growth of digital healthcare solutions has underscored the need for accessible and intelligent systems that can help users manage their health effectively. This project proposes the development of an AI-powered chatbot with a Fitness assistant capable of analysing user-described symptoms, providing preliminary prescriptions, and recommending doctors when necessary. A unique aspect of this system i s its ability to process user-uploaded images to create avatars, estimate physical attributes such as age, height, and weight, and incorporate them into health assessments. Unlike conventional health applications, this chatbot combines natural language processing, image processing, and decision support to deliver a more interactive and personalized healthcare experience. The intended impact of this project is to empower individuals with instant, reliable, and user-friendly health guidance while reducing the initial burden on healthcare professionals.

Tools & Technologies

- Frontend: React.js(Web),HTML,CSS, Tailwind/Bootst rap
- Backend: Python
- Database: MongoDB / MySQL / PostgreSQL
- Dev Tools: Git, GitHub, Docker, Vercel

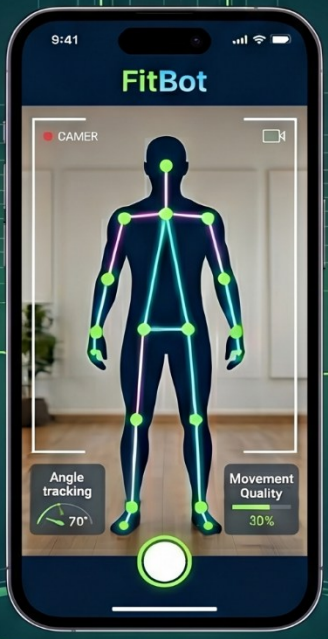
FitBot: AI-Powered Personal Fitness Assistant

Image-based BMI Calculation

Utilizes machine learning algorithms to accurately estimate Body Mass Index (BMI) directly from user-uploaded images, eliminating manual entry.

AI Diet Consultation

Provides personalized diet plans and meal recommendations based on user goals, nutritional needs, and fitness objectives.



Personalized Workout Suggestions

Generates tailored workout routines and exercise suggestions based on user fitness level, equipment availability, and target areas.

Real-time Exercise Form Tracking

Uses body skeletal analysis to monitor form in real-time, providing immediate feedback on posture and alignment to prevent injury.

Methodology

- **Data collection:** Defines, collects, and cleans a wide dataset of movement videos and images for model training and validation.
- **Model development:** Designs, builds, and trains a custom computer vision model optimized for human pose estimation and movement analysis.
- **Real-time feedback:** Implements real-time analysis algorithms to compare user movement against optimal form, delivering immediate performance insights.

Team Members

Urwa Tul Wusqa (BSEF22M007)

Adeeba Maqbool (BSEF22M025)

Aleena Hassan (BSEF22M013)

Zaha Ashfaq (BSEF22M034)

FPSEF25X03
Lead Generation Pro

Group members:

BSEF22M005: *SADIA KHALIL*, BSEF22M026: *HANIA MARIYA*, BSEF22M038: *AMNA BABAR*, BSEF22M040: *AYESHA ZAHID*

Supervised by: Dr Shuja-ur-Rehman Baig

Abstract

This project addresses the challenge faced by software and consultancy firms in identifying high-quality client leads across multiple platforms. Current solutions are either expensive, platform-specific, or limited in flexibility. Our proposed solution, Lead Generation Pro, will scrape and aggregate lead data from multiple websites using a dynamic scraping engine. Leads are enriched, scored, and tracked end-to-end, then passed into a multi-channel outreach automation pipeline (email, SMS, DMs, auto-dial) with template personalization, timing rules, and opt-out compliance. Compared to existing tools, our system is customizable, cost-aware, and extensible, making it a practical acquisition engine for SMEs and agencies.

Tools & Technologies

- Frontend: React
- Backend: FastAPI, crawl4ai, Playwright, BeautifulSoup
- Database: PostgreSQL
- Dev Tools: Git, GitHub, Docker

SCOUT

AI-powered Lead Generation & Outreach Platform

Find. Enrich. Reach. Scale.

Lead Generation

Easy-to-use customizable web scraping system

Lead Enrichment

Integration with Hunter, Apollo, and website parsing

Automated Outreach

Personalized outreach at scale (10,000+ leads)

Why it Matters

Manual lead hunting is slow, inefficient, expensive, and hard to scale.

Empower startups and b2b companies by combining leads scraping, enrichment, and outreach in one unified AI-powered pipeline.

Tech Stack

Sadia Khalil
Hania Mariya
Ayesha Zahid
Amna Babar

PUCIT
PUNJAB UNIVERSITY COLLEGE OF INFORMATION TECHNOLOGY

Supervisor: Dr. Shuja ur Rehman Baig

FPSEF25X04
Artify – A Digital Marketplace for Artists and Art Enthusiasts

Group members:

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Supervised by: Dr Madeeha Aman

Abstract

Artify is a digital marketplace designed to bridge the gap between talented artists and potential clients. Many artists, including painters, calligraphers, sculptors, musicians, singers, and performers, face difficulties in showcasing their skills and securing work due to limited communication with hiring agencies and buyers. Similarly, art enthusiasts and organizations often struggle to directly connect with skilled artists or purchase authentic artwork. Artify provides a unified platform where artists can create professional profiles, list their services or products, and directly interact with agencies and buyers. Unlike traditional exhibitions or generic freelancing platforms, Artify is dedicated exclusively to the art community, promoting accessibility, visibility, and commercial opportunities for artists worldwide.

Tools & Technologies

- Frontend: React
- Backend: ASP .NET Core (C#)
- Database: SQL Server
- Dev Tools: Visual Studio Community, VS Code, SSMS, Git, GitHub, Docker, Postman, trello

Artify
Creative Hub

PROBLEM

- Artists lack visibility
- Art theft & plagiarism
- Hard to find trusted artists

VS

SOLUTION

- Centralized art platform
- Secure & verified ecosystem
- Artist-client connection

CHOOSE YOUR ROLE

Artists
- Sell artwork & services
- Showcase portfolio
- Apply for jobs

Art Enthusiasts
- Buy art directly
- Hire artists
- Post project requests

Agencies
- Buy, sell, hire, , apply
- Full platform access

Admin
- Ensure platform security
- Manage transactions
- Verify users & artworks

KEY FEATURES

- AI-Based Recommendations
- Reviews & Ratings
- Smart Search & Filtering
- Artist Portfolios
- Real-Time Chat
- Live Notifications
- E-Commerce Integration

SECURITY & INNOVATION

Artwork Protection System

- Watermarking
- Digital Fingerprints
- pHash + SHA-256 Hashing
- Plagiarism Detection

HOW IT WORKS

Artist uploads → Platform protects → Buyer discovers → Chat/Hire → Secure transaction

TECH STACK

- React
- ASP.NET
- SQL Server
- Python AI
- Tailwind Css
- Azure

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FPSEF25X05

Smart Food Analyzer: Nutrient Profiling from Food Images (Focusing on Pakistani Cuisine)

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Supervised by: Dr Shuja-ur-Rehman Baig & Dr Muhammad Farooq

Abstract

The Smart Food Analyzer project aims to create a computer vision-based system that can detect Pakistani food items from images and estimate their nutritional content using deep learning techniques. The application will allow users to upload or capture images of food, classify the dish (e.g., Biryani, Haleem, Nihari), and receive an estimated nutrient profile (calories, proteins, carbs, fats, etc.). This system will be trained on a curated dataset of local cuisine images and tagged with standard nutritional values derived from food composition databases. The goal is to assist health conscious individuals and patients in monitoring their diet and improving food awareness using technology.

Tools & Technologies

- Frontend: Flutter
- Backend: Flask + FastAPI
- Database: Firebase
- Dev Tools: Git, GitHub, Postman

SMART FOOD ANALYZER FOR PAKISTANI CUISINE

EATOLOGY

SCANNED, ANALYZED, NOURISHED,
YOUR COMPREHENSIVE GUIDE TO HEALTHY EATING

PROJECT OVERVIEW

Entology is a comprehensive, AI-powered system designed to simplity healthy cesting automaticaily from image inputs. It provides and users with automated nutrient and macro-nutrrent analysis for optimal meal tracking.

- Accurate nutrient tracking for Pakistanl dishes
- Multi-dish classification and accurate calorie/portion estimation
- Streamlined meal logging for improved planning and dieta

THE APP INTERFACE

PAKISTANI DISH RECOGNITION

PORTION ESTIMATION

MULTI-DISH SEGMENTATION

NUTRIENT PROFILING

USER EXPERIENCE

- Real-time nutrient estimation from single scan
- Smart goal tracking with accurate summaries
- Intuitive user journey with immediate visual journey
- Precise *macro-nutrient* breakdown (accuracy 55%)
- Improved meal planning and easy compilance

FUTURE IMPACTS

- Personalized nutrition via real-time food analysis
- Better disease management (e.g., diabetes, obesity)
- Data-driven food industry insights
- Improved public health & policy planning

TEAM: BSEF22M011-FIZA KHAN, BSEF22M017 HUDA EJAZ, BSEF22M018,ALISHBA UMER FAROOQ

SUPERVISOR: PROFESSOR SHUJA UR REHMAN BAIG. **CO-SUPERVISOR:** DOCTOR FAROOQ

FPSEF25X06

Computer Aided Diagnosis System for Detecting Abnormalities in Mammograms

Group members:

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Supervised by: Dr Madiha Khalid & Dr Zubia Sohail

Abstract

Medical imaging is a vital field in disease diagnosis, but manual interpretation of images such as mammograms, X-rays, and CT scans is time-consuming and error-prone. This project proposes a deep learning-based web application that performs automatic segmentation on mammogram datasets to predict potential diseases. Unlike traditional methods that rely on handcrafted features, the system leverages convolutional neural networks to extract hierarchical feature representations directly from medical images, improving accuracy and reducing reliance on manual analysis. The web application, developed using the .NET framework, will provide a user friendly interface for image upload, processing, and visualization of results, making it accessible to medical professionals. The proposed solution aims to support radiologists in early disease detection, enhance diagnostic reliability, and set the foundation for future extensions to other imaging modalities and larger datasets.

Tools & Technologies

Frontend: Angular (HTML, CSS, JavaScript)
Backend: .NET Core / ASP.NET Core
Database: Entity Framework (with SQL Server)
Dev Tools: Git, GitHub, Docker, Postman,Visual Studio

Computer Aided Diagnosis System

for Detecting Abnormalities in Mammograms

TEAM MEMBERS

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Effia Tariq (BSEF22M046)
Fatima Khan (BSEF22M035)
Aliza Arif (BSEF22M022)

SUPERVISED BY

Dr. Madiha Khalid – Assistant Professor
Dr. Zobia Sahail – Assistant Professor

PROGRAM

BS Software Engineering
2022 – 2026
University of the Punjab

ABSTRACT

Breast cancer is the most common cancer diagnosis among females globally. Mammography is the primary screening modality, yet accurate interpretation is challenging due to subtle visual differences between benign and malignant lesions. This project presents a Computer-Aided Diagnosis (CAD) system that automates the full pipeline from raw mammogram images through to classification and pixel-level segmentation of abnormalities, leveraging deep learning and advanced image processing to standardize and improve diagnostic accuracy.

For classification, the system employs EfficientNetV2-S with transfer learning, achieving **79.76% test accuracy** and **ROC AUC of 0.83,** substantially outperforming baseline MobileNet. For segmentation, the pipeline applies **CLAHE** adaptive contrast enhancement, Gaussian blur for noise suppression, and morphological operations to isolate breast tissue regions. Four novel feature channels are fused using a soft. confidence weighted scheme: a Frangi filter for strand-shaped tissue detection, an LBP texture map to suppress smooth fat regions, a LoG blob detector for compact calcification clusters, and a soft weighted fusion replacing hard boolean logic. This multi-channel approach generates accurate pixel-level masks with a continuous confidence map, enabling precise lesion delineation across diverse mammogram presentations.

SYSTEM PIPELINE

01 Image Pre-Processing

- DICOM to PNG conversion
- NBI/SON cal scale mapping
- Intensity normalization
- 400+ patients structured footage

02 Feature Extraction

- Patch-level feature extraction
- NBS/SON can mapping
- Features shown in TXT files
- 400+ patient validation

03 Patch Generation

- ROI patch extraction from PNG
- 448x448 px patch size
- Consistent splitting of images
- Tip, orientation +1.5 deg. filter

04 Classification

- EfficientNetV2-S + ImageNet
- Benign vs Malignant binary
- Focal loss + early smoothing
- Stratified 5-fold cross-validation

05 Segmentation

- CLAHE adaptive enhancement
- Frangi + LBP + LoG channels
- Soft confidence weighted fusion
- Pixel-level mask + confidence map

KEY RESULTS

Classification Metric	EfficientNetV2-S	MobileNet
Test Accuracy	**79.76%**	66.60%
ROC AUC	**0.830**	0.665
Macro F1	**0.795**	0.660
Train Accuracy	**86.16%**	73.12%
False Positives	**24**	99
False Negatives	**30**	66

EfficientNetV2-S outperforms MobileNet by +13.16% accuracy and +0.165 AUC

SEGMENTATION RESULTS (NOVEL PIPELINE)

Feature Channels	**4 Channels**
Fusion Strategy	**Soft Weighted**
Baseline Approach	**Hard AND Logic**
Novel Output	**Confidence Map**

Segmentation Feature	Baseline	Novel Pipeline
Strand/Tissue Detection	Intensity only	**Frangi Filter (shape)**
Fat Region Suppression	None	**LBP Texture Map**
Calcification Clusters	Single-scale top-hat	**LoG Blob (3 scales)**
Map Combination	Hard AND	**Soft Fusion (weighted)**
Output	Binary mask only	**Mask + Confidence Map**

Fusion weights: LoG (1.8) > Frangi (1.5) > Top-hat (1.0) > LBP (0.8). Adaptive threshold at 92nd percentile retains top 8% confident pixels per image.

METHODOLOGY

Deep Learning Model: EfficientNetV2-S

- Compound scaling: depth, width and resolution
- ImageNet pre trained weights, partially frozen backbone
- Custom classification head with dropout (p=0.3)

Training Strategy

- AdamW optimizer with Cosine Annealing Warm Restarts
- LR schedule: backbone 1e-5, head 1e-4
- Early stopping (patience=10 epochs)

Class Imbalance Handling

- Focal loss (alpha=0.25, gamma=2.0) focuses on hard examples
- Label smoothing (epsilon=0.1) reduces annotation uncertainty
- WeightedRandomSampler oversamples minority class

Segmentation Pipeline (Novel Contributions)

- CLAHE adaptive contrast + Gaussian blur preprocessing
- Multi-scale top-hat morphological filter (baseline)
- Frangi filter – Hessian-based strand and ridge detection
- LBP texture map – suppreses smooth fat before thresholding
- LoG blob detector – compact circular calcification clusters
- Soft weighted fusion with continuous confidence output

Evaluation and Validation

- Stratified 5-fold cross-validation (AUC: 0.81–0.85)
- Ensemble of 5 best checkpoint models
- Youden's J optimal threshold selection
- Independent held-out test set (n=414)

TECHNOLOGIES:

Python | PyTorch | Torchvision | OpenCV | pydicom | scikit-image

DATASET

- 400+ patient records with DSM/DCM mammogram images
- Patient-stratified splits (Split3, Split4) – Train / Validate / Test
- Benign and Malignant class subfolders
- Patient-level stratification prevents data leakage
- Resize to 448x448 pixels
- ImageNet normalization (mean and std)
- Data augmentation: flip, rotate, brightness/contrast jitter

CONCLUSION

- ✓ 79.76% Test Accuracy
- ✓ ROC AUC = 0.83
- ✓ 24 False Positives vs 99 (MobileNet)
- ✓ 4-Channel Novel Segmentation Pipeline
- ✓ Accurate Pixel-Level Lesion Delineation

**The system demonstrates strong diagnostic potential and supports integration into clinical CAD pipelines.
EfficientNetV2-S significantly reduces false positives and false negatives compared to MobileNet.
The novel multi-channel segmentation pipeline – using CLAHE, Gaussian blur, morphological processing, Frangi, LBP, LoG, and soft weighted fusion – enables precise and reliable pixel-level lesion delineation from raw mammogram patches.**

FPSEF25X07

ScholarBuzz – A Smart Scholarship Recommendation System

Group members:

BSEF21M056: *ZILLEHUMA*

Supervised by: Dr Natalia Chaudhry

Abstract

Finding scholarships can be challenging for students due to scattered information, complex eligibility criteria, and strict deadlines. ScholarBuzz is a web-based platform where students can create profiles, and upload resumes to receive personalized scholarship recommendations. The system uses a hybrid matching approach, combining AI-based classification for flexible interpretation of skills and profile data with rule-based filtering to enforce strict eligibility criteria. In-app notifications alert students to new scholarship matches and remind them of upcoming deadlines, ensuring timely applications. By providing intelligent recommendations along with proactive reminders, ScholarBuzz reduces manual effort, improves access to opportunities, and helps students apply to the most suitable scholarships on time.

Tools & Technologies

- Frontend: React.js, Tailwind CSS, HTML, JavaScript
- Backend: Node.js or .NET Core
- Database: MySQL (Relational DB) + Firebase (File Storage for resumes & documents)
- Dev Tools: Git, GitHub, Docker, Postman

Finding the right scholarship — intelligently.

ScholarBuzz

A Smart Scholarship Recommendation System

"Never miss an opportunity that's meant for you"

THE PROBLEM

- Scattered Searches
- Missed Deadlines
- No Personalized Guidance

KEY FEATURES

- **Smart Matching Engine**
- **Resume Parsing**
- **ScholarBot AI Chat**
- **Deadline Notifications**
- **Admin Panel**

TECH STACK

- React & Vite
- FastAPI & Cohere
- PostgreSQL / MongoDB
- Jenkins & Vercel

SYSTEM ARCHITECTURE

React Web App → FastAPI REST APIs → Cohere Embeddings → Deadline Notifications → Admin Scheduler

PROJECT OUTCOMES

- **34** User Stories
- **6** Agile Sprints
- Vercel & Render Deployments
- **34** User Stories
- Jenkins Build #12
- Swagger-Verified APIs

TEAM

Zille Huma Product Owner & Scrum Master

Supervisor: Dr. Natalia Chaudhry, Assistant Professor

Institution: Faculty of Computing & IT
University of the Punjab, Lahore

Program: BS Software Engineering (2022-2026)

Group ID: FPSEF25X07

FPSEF25X09

Vision-Code: Adaptive Coding Academy Powered by AI and Computer Vision.

Group members:

BSEF22M003: *M. UMAIR ASHRAF*, BSEF22M009: *M. HAZIQ ABDULLAH*, BSEF22M021: *HASSAN TANVEER*, BSEF22M024: *MUJADDAD AHMAD*

Supervised by: Dr Muhammad Farooq

Abstract

Learning Data Structures and Algorithms (DSA) is often challenging due to abstract concepts, lack of personalized feedback, and limited engagement. Our project aims to build an AIpowered interactive learning platform that combines computer vision, artificial intelligence, and gamification to make DSA learning adaptive, engaging, and effective. The system integrates features such as webcam-based proctoring, emotion and attention tracking, handwritten codeto-digital conversion, AI tutoring, real-time collaborative coding, and gamified competitions. Unlike traditional platforms, it leverages CV for visual problem solving, AI for adaptive learning paths, and cloud for scalable evaluation. This holistic approach creates a smarter, secure, and more engaging environment for students, ultimately preparing them better for real-world problem solving and technical interviews.

Tools & Technologies

Frontend: Blazor WebAssembly (C# SPA)
Backend: ASP.NET Core Web API (REST, modular services)
Database: SQL Server + Entity Framework Core
AI/ML: ML.NET + ONNX Runtime (.NET)
Cloud: Azure App Service, Azure Functions, Azure Cognitive Services

VISION CODE

AI-POWERED LEARNING ECOSYSTEM

THE FUTURE OF SMARTER, MORE ENGAGING LEARNING

AI-INTEGRITY GUARDIAN

ENSURING FAIRNESS & TRUST

1 AI-ASSISTED ATTENTION TRACKING

2 SOUND DETECTION & ANALYSIS

AMBIENT AUDIO MONITORING

3 IDENTITY VERIFICATION & SECURE ACCESS

Protected. Verified. Trusted.

FOR LEARNERS

1 MULTIPLE COURSES & CERTIFICATIONS

ONLINE COURSES

CERTIFICATES

2 THE HANDWRITTEN CODE CONVERTER

WRITE IT SCAN IT CONVERT IT

Turn handwritten code into clean, digital code instantly.

3 SMART ASSESSMENTS & FEEDBACK

ADAPTIVE QUIZZES & TESTS

REAL-TIME FEEDBACK & PROGRESS TRACKING

FOR INSTRUCTORS

TEACH & ENGAGE YOUR STUDENTS

UPLOAD COURSES
Easily upload and organize learning content.

MANAGE CONTENT
Organize, update, and structure your courses.

ENGAGE LEARNERS
Communicate, interact, and keep learners motivated.

TRACK PERFORMANCE
Monitor progress and improve learning outcomes.

FPSEF25X10

IntelliFone – AI-Powered Mobile Phone Marketplace with Smart Verification

Group members:

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Supervised by: Dr Muhammad Farooq

Abstract

IntelliFone is a smart phone-buying app that uses AI to make buying and selling used phones much easier and safer. Right now, when people buy used phones, they can't really tell if the phone is in good condition or if the price is fair. Our app solves this by using AI to check the phone's condition automatically, suggest the right price, and make sure the phone is real and not stolen. Instead of just trusting what sellers say about their phones, IntelliFone actually examines the phone using the camera and runs tests to see what's wrong with it. It also has a smart chatbot that helps people find the perfect phone for their needs and budget. Our goal is to make buying used phones as trustworthy as buying new ones.

Tools & Technologies

- Frontends: React Native (Expo) + Next.js (React, Tailwind, TypeScript)
- Main Backend & DB: Next.js API, JWT + Bcrypt, PostgreSQL
- AI Backend & DB: FastAPI (Python), MongoDB
- AI/ML & Vision: Scikit-learn, TensorFlow/PyTorch, OpenCV, YOLO, R-CNN, MobileNet, PIL

IntelliFone

- FYP - PUCIT 2022-2026 -

An AI-powered marketplace for second-hand mobile phones in Pakistan — bringing **objective verification, intelligent pricing, and trust** to every ad.

PROBLEM

OLX/Facebook listings have zero verification, no fair pricing, and **73%** of users don't trust them.

SOLUTION FLOW

Photos → YOLO Damage Detection → Condition Score (0–20) → PKR Price Range → PDF Report

CORE MODULES

MODULE	TECH	OUTPUT
Damage Detection	YOLOv11-seg	Cracks, lines, dots
Condition Scoring	Log penalty formula	0–20 score
Price Prediction	Random Forest + OLX data	PKR range ±IQR
Recommendations	DeepSeek + YouTube NLP	Ranked phones
Sensor Diagnostics	React Native / Expo	8 hardware checks
AI Chatbot	DeepSeek + MongoDB	Context-aware Q&A

RESULTS

Best model:
YOLOv11-seg (M7)

mAP@50
0.640

Dataset
3,218 images | **4,707** annotations

STACK

Next.js | React Native | FastAPI | MongoDB | Supabase | Vercel | Roboflow

TEAM
Taha Khan | Fassih Hassan | Faheem Umer | Shayan Ahmed
Supervisor: Dr. Muhammad Farooq

intellifone.vercel.app
github.com/FassihShah/IntelliFone

FPSEF25X11

RecruitPro - A Smart Hiring Platform

Group members:

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Supervised by: Dr Natalia Chaudhry

Abstract

RecruitPro is an AI-powered hiring platform that streamlines recruitment end-to-end—from job posting and talent search to resume screening, interview scheduling, and offer letter generation in one dashboard. It uses advanced AI to understand candidate skills beyond keywords, enabling fairer and more accurate matches while automating repetitive HR tasks. The following is how our system works: The HR department creates a job opening for a specific position. A job advertisement is prepared, and permission is obtained to post it on hiring platforms. On-demand search criteria entered by the HR manager (e.g., skills, location, job title, company) for talent hunt through external APIs. Candidates apply through the link provided in the job posting, where they are required to answer predefined screening questions and upload their CVs. The AI system assists in matching resumes with the job requirements. Calendars are utilized to schedule interviews. Predefined templates are used to generate personalized offer letters.

Tools & Technologies

- Frontend: React.js
- Backend: Python with the FastAPI framework
- Database: PostgreSQL (for structured data like user profiles) and Chroma DB (as the vector database for resume embeddings)

FINAL YEAR PROJECT - 2026

RecruitPro: A smart hiring platform

Automating the Recruitment Pipeline – from Job Post to Interview

PROBLEM STATEMENT

Fragmented & Inefficient Hiring

Manual & Time-Consuming
Traditional hiring is heavily siloed, requiring days to coordinate with teams for every stage.

Platform Fragmentation
Ads for jobs and resume scheduling happen with limited success across disparate tools with no unified feed.

Scheduling Chaos
Coordinating interviews via multiple emails leads to delays and a poar candidate experience.

PROPOSER SOLUTION

End-to-End Automated Pipeline

RecruitPro provides a unique, fully automated pipeline, it leverages its intelligent candidate screening and evaluation to automate and ahead—freeing up HR teams to focus on human interaction during firing.

AI-Powered | Fully Automated | End to-End | Bias-Reduced

"The platform – from job creation to the candidate's final confirmation, with minimal manual intervention required."

KEY FEATURES

Platform Capabilities

Automated Distribution
Automated distribution automatically pusts created job descriptions across a multitude of target platforms.

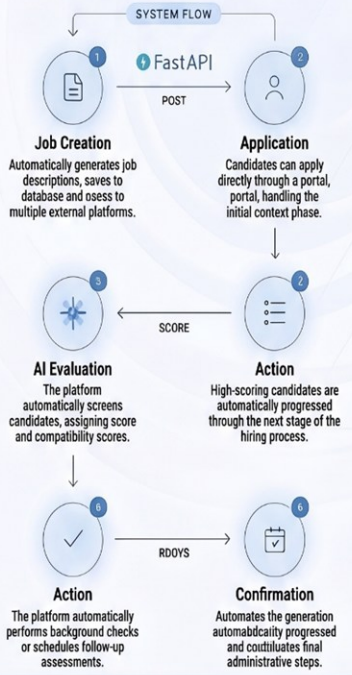
AI Resume Screening
AI Resume Screening is used to transform candidate screening reviewing and extracting key compatibility scores.

Smart Scheduling
High-renking scheduling will select interview times for first round selectees, initiating a back and forth.

Calendar Integration
Calendar integration will load available availability times. Calendar ensures all participants can confirm.

SYSTEM ARCHITECTURE & WORKFLOW — AUTOMATED

End-to-End Recruitment Pipeline



TECHNOLOGY STACK

Built With

FRONTEND

React | Linkedin

BACKEND & AI — AI

Python | FastAPI | LinkedIn | Hugging Face Transformers | Google NLP

DATABASE & CLOUD

PestgreSQL | AWS

KEY OUTCOMES & IMPACT

Results & Contributions

100%	1 Hub	NLP
Automated Scheduling	Unified Platform	Semantic Ranking

- AI-Powered
- Fully Automated
- End-to-End
- Bias-Reduced

FPSEF25X12

SmartLearn: An interactive child learning platform with real-time engagement

Group members:

BSEF22M042: *AREEHA ZULFIQAR CHAUDHARY*, BSEF22M030: *LAIBA AJMAL*, BSEF22M047: *SALAL SHABBIR*, BSEF22M020: *ABDUL AHAD*

Supervised by: Dr Muhammad Farooq

Abstract

Online meetings have surged since COVID, but most platforms only track attendance—not actual engagement. This system addresses that gap by integrating a meeting platform with computer vision–based tracking to monitor attentiveness through face presence and gaze direction. It records attendance, analyzes engagement in real time, and generates automated session reports for each participant. Lightweight and versatile, it can be used in education, corporate training, and virtual events, helping organizers better evaluate and improve session effectiveness.

Tools & Technologies

- Frontend: Next.js (React), Tailwind CSS, Recharts/Chart.js
- Backend/API: Node.js (Express.js), WebRTC
- Database: PostgreSQL (Supabase) + Prisma ORM
- Computer Vision: Python, OpenCV, Mediapipe
- Auth & Security: Supabase Auth or NextAuth (with JWT)
- DevOps: Git, GitHub, Vercel (frontend), Render/Heroku (backend)
- Collaboration: Jira

FINAL YEAR PROJECT · DEPT. OF SOFTWARE ENGINEERING · 2026

SmartMeet

AI-POWERED REAL-TIME ENGAGEMENT TRACKING & AUTOMATED REPORTS

01 The Problem

- NO ENGAGEMENT TRACKING
- MANUAL ATTENDANCE
- INEFFICIENT MEETINGS

02 Our Solution

SmartMeet uses **AI & Computer Vision** to transform every meeting into a **data-driven**, engagment analysis.

- Real-time AI Inference Engine
- Computer Vision Face Analysis
- Smart Analytics Dashboard

03 Key Features

- REAL-TIME FACE DETECTION
- AUTOMATED ATTENDANCE
- ENGAGEMENT ANALYSIS
- SMART DASHBOARD
- CLOUD-BASED ACCESS

04 How It Works

Client Browser	Next.js Frontend	Backend APIs	AI / CV Module	Cloud DB & Storage
WebRTC · Media Capture · WS	Vercel · React 19 Tailwind CSS	REST · WebSocket Auth · Sessions	Face Detection Emotion · Attention	Sessions · Analytics Media Storage
ENTRY POINT	UI LAYER	API LAYER	AI CORE	DATA LAYER

05 Impact & Benefits

- **Increased Productivity** — Less time wasted in meetings
- **Accurate Attendance** — Zero manual effort required
- **Real-Time Insights** — Instant engagement feedback
- **Better Decisions** — Data-backed meeting outcomes

06 Technology Stack

- Next.js — FRONTEND
- Vercel — HOSTING
- AI / CV Module — INTELLIGENCE
- Cloud Services — INFRASTRUCTURE
- REST APIs — BACKEND

Next.js (UI) > API (Backend) > AI/CV (Intelligence) > Cloud DB (Storage)

SmartMeet

FPSEF25X12

DEPT. OF SOFTWARE ENGINEERING
FINAL YEAR PROJECT – 2026

SUPERVISED BY
Dr. Muhammad Farooq
Assistant Professor

DEVELOPMENT TEAM

- AA — **AbdulAhad** — BSEF22A020
- LA — **Laiba Ajmal** — BSEF22B030
- AZ — **Areeha Zulfiqar** — BSEF22W042
- SS — **Salal Shabbir** — BSEF22B047

FPSEF25X13

CricVision – AI-Powered Computer Vision Umpiring Assistant for Cricket Practice Sessions

Group members:

BSEF22M031: *MUHAMMAD MUBASHIR IFTIKHAR*, BSEF22M015: *USMAN ALI*, BSEF22M014: *AMEER MUAVIA*, BSEF22M027: *MUHAMMAD AHMAD*

Supervised by: Dr Muhammad Farooq

Abstract

Umpiring in cricket requires accuracy in detecting no-balls, wides, and other violations, but during practice sessions, professional umpiring support and expensive technologies like Hawk-Eye or DRS are often unavailable. This project proposes a computer vision–based AI system that uses multiple camera inputs(mobile) to monitor cricket practice sessions. The system will detect no-balls (foot over the crease), waist-height full tosses, wide deliveries, and ball trajectory for review purposes. It will serve as a cost-effective, deployable practice umpire, enabling players to improve skills with real-time feedback. By applying Agile methodology and leveraging modern AI/ML frameworks, the project ensures iterative development and measurable progress.

Tools & Technologies

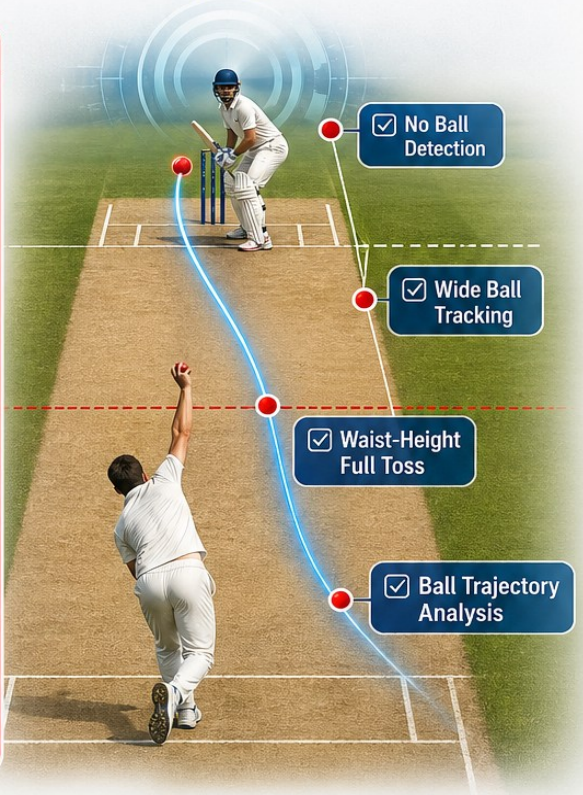
- Frontend: React-native (for cross-platform)
- Backend: FastAPI / Node.js
- Database: Firebase / MongoDB / postgresql
- AI/ML: OpenCV, TensorFlow / PyTorch
- Dev Tools: Git/GitHub, Postman/swagger, Jupyter Notebooks/Colab Notebooks, JIRA

CRICKVISION

AI-Powered Umpiring Assistant for Cricket Practice

PROBLEM

- NO UMPIRE IN PRACTICE
- EXPENSIVE TECH (HAWK-EYE / DRS)
- HUMAN ERROR
- NO INSTANT FEEDBACK



SOLUTION

- AI-POWERED VISION SYSTEM
- USES MOBILE CAMERAS
- REAL-TIME DECISION SUPPORT
- AFFORDABLE & DEPLOYABLE

HOW IT WORKS

1. MULTI-CAMERA INPUT (MOBILE)
2. COMPUTER VISION MODEL
3. DETECTION ENGINE
4. INSTANT FEEDBACK

TRAIN SMARTER. PLAY FAIR. IMPROVE FASTER.

CRICKVISION | AI + COMPUTER VISION PROJECT

FPSEF25X51
AI Medical Scribe Application

Group members:

BSEF22M509: *MUHAMMAD MOEEZ KHAWAR*, BSEF22M529: *MUHAMMAD AHMED*, BSEF22M541: *FARAKH FAROOQ*, BSEF22M547: *MUHAMMAD IBRAHIM*

Supervised by: Dr. Adeel Nisar

Abstract

The essence of medicine is healing people, but doctors today spend more time typing notes than talking to patients. Our project builds an AI medical scribe that listens to conversations, transcribes them accurately, and generates structured notes and orders seamlessly integrated into electronic health records. What makes it unique is its focus on adaptability—learning from each doctor's style while ensuring ironclad security and real-time performance across devices. This isn't just automation; it's a tool that restores human connection in healthcare, potentially saving hours per doctor per day and reducing burnout. By targeting high accuracy for specialties and supporting telehealth, we aim to make clinical workflows feel effortless, impacting millions in an overburdened system.

Tools & Technologies

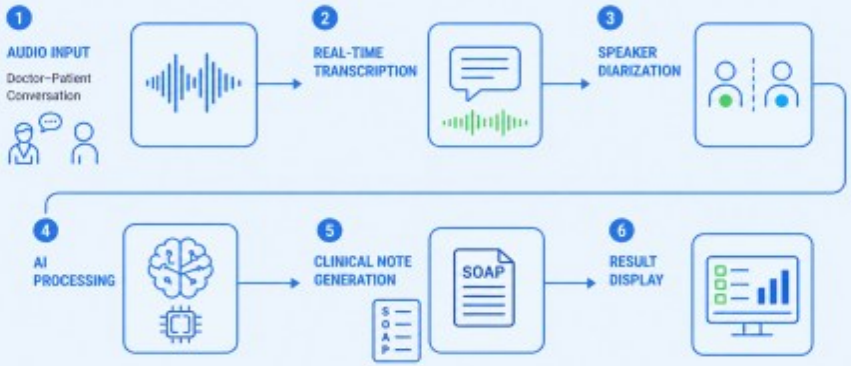
- Frontend: React / HTML+CSS
- Backend: FastApi + SqlAlchemy
- Database: Postgres / Redis
- Dev Tools: Git, GitHub, Docker, Postman,Vercel
- Machine Learning Models: Whisper, MedBert (for MVP)

Department of Sofware Engineering,
FCIT, University of the Punjab, Lahore

FPSEF25X51

NOTEPOINT

Notepoint is a web-based AI medical scribe that listens to doctor-patient conversations, transcribes them in real time, and converts them into structured notes like SOAP, reducing manual documentation workload and improving clinical efficiency overall.



We have used React.js with Tailwind CSS for the frontend, FastAPI for the backend, and PostgreSQL for the database. The MedWhisper model from Hugging Face is used for medical transcription. Gemini is integrated for notes generation. The application is containerized and deployed using Docker/Docploy for smooth and scalable deployment across different platforms.

Tools and Technologies

Our Team

Dr. Muhammad Adeel Nisar (Supervisor)

Muhammad Moeez Khawar (Frontend Developer) — LinkedIn

Muhammad Ahmed (Scrum Master) — LinkedIn

Farakh Farooq (Backend Developer) — LinkedIn

Muhammad Ibrahim (AI Integration Lead) — LinkedIn

FPSEF25X52
Pitch Pilot

Group members:

BSEF22M548: *MUHAMMAD ZUBAIR ARIF*, BSEF22M522: *MUHAMMAD ZAID*, BSEF22M519: *HASNAIN RASHEED*, BSEF22M549: *MUTTIULLAH*

Supervised by: Prof. Dr. Muhammad Kamran Malik & Dr Omer Nawaz

Abstract

The pre-development phase of the SDLC—covering requirements, feasibility, planning, and documentation—is critical but often flawed due to unclear client input, lack of domain expertise, and system complexity. This leads to incomplete, ambiguous, and frequently changing requirements, along with poor analysis, prioritization, and documentation—causing delays and higher costs.

This project proposes an AI agent to automate requirement gathering and analysis by extracting and validating requirements, assessing feasibility (time, cost, resources), prioritizing tasks, and generating structured documentation and wireframes. The goal is to reduce human error, save time, optimize resources, and ensure more accurate, efficient project delivery within budget and deadlines.

Tools & Technologies

- Frontend: HTML+CSS, Tailwind, React Js
- Backend: Node.js + Python
- Database: MongoDB
- Dev Tools: Git, GitHub, Docker, Jira, LLM Models, Prompt Engineering, Postman

Pitch Pilot

AI-Powered Pre-Development Automation for SDLC

THE PROBLEM

37% of project failures due to poor requirements

68% of requirement defects found too late

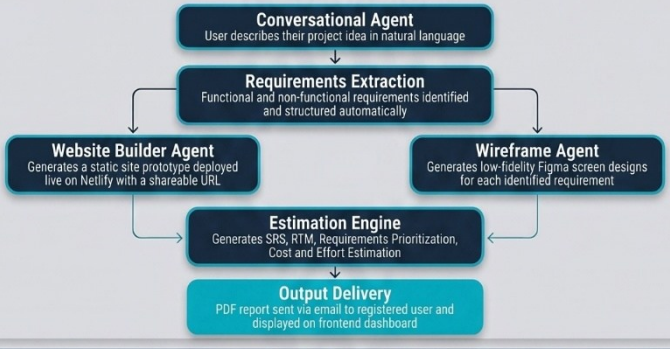
25–40% cost overrun from RE issues

OUR SOLUTION

An AI Agent that automates the entire pre-development phase — from requirements to documentation — end to end.

Gather → Validate → Estimate → Deliver

HOW IT WORKS



KEY FEATURES

- Conversational AI Agent
- Live Prototype on Netify
- Figma Wireframe Generation
- Auto-Generated SRS & RTM
- Cost & Effort Estimation
- PDF Report via Email

TECH STACK

Frontend
React.js · Tailwind CSS · HTML/CSS

Backend
Node.js · Python

AI & Tools
LLM Models · NLP · Netlify · Figma API · MongoDB · Docker · GitHub

IMPACT / WHY IT MATTERS

- Saves pre-development time
- Eliminates human bias in RE
- Higher project success rates

TEAM & SUPERVISION

DEVELOPED BY
Hasnain Rasheed — BSEF22M519
Muhammad Zaid — BSEF22M522
Muhammad Zubair — BSEF22M548
Mutti Ullah — BSEF22M549

SUPERVISED BY
Primary: Prof. Dr. Muhammad Kamran Malik (Chairman, Dept. of Data Science)
Co-supervisor: Dr. Omer Nawaz (Asst. Prof., Dept. of Software Engineering)

FPSEF25X53

Forensica AI (deepfake video detector)

Group members:

BSEF22M545: *MUHAMMAD ALI*, BITF22M512: *ABDUL BASIT*, BITF22M552: *KHUZAIMA BIN SHOAIB*, BITF22M545: *MUHAMMAD HASHIR*

Supervised by: Dr Nadeem Akhtar

Abstract

Deepfake technology is rapidly evolving, posing risks to trust, security, and information integrity. Forensica AI addresses this by using deep learning to analyze videos through frame-level and temporal features, detecting subtle signs of manipulation. It generates an authenticity score to help users verify content.

With a hybrid approach that examines visual inconsistencies, audio-visual sync, and temporal coherence, it improves accuracy and reduces false positives. Designed to generalize across platforms and video qualities, Forensica AI is a scalable, user-friendly solution for media, cybersecurity, and law enforcement to combat misinformation.

Tools & Technologies

- Frontend: React.js, HTML5, CSS3, Bootstrap.
- Backend: Django
- Database: MongoDB
- AI/ML/DL: Python, NumPy, pandas, Scikit-learn ML algorithms. PyTorch,TensorFlow, OpenCV,dlib

Forensica AI

THE TRUTH CANNOT BE FAKED

MULTIMODAL DEEPFAKE DETECTION

The Truth Cannot Be Faked

Forensica AI is an AI-powered platform designed to detect and analyze deepfake videos with high precision.

Using multimodal deep learning, the system combines visual, temporal, and audio analysis to identify manipulated media and provide authenticity scores with supporting evidence.

Multimodal Analysis
Visual + Audio + Temporal

Deep Learning Models
CNN + RNN/LSTM + Whisper

High Accuracy
Authenticity Score System

Real-Time Detection
Fast AI Inference

HOW IT WORKS

1. **UPLOAD VIDEO** — Upload video or media
2. **FRAME EXTRACTION** — Extract frames from video
3. **DEEP LEARNING ANALYSIS** — AI models analyze visual, audio & temporal patterns
4. **AUTHENTICITY SCORE** — 97.3% Real or Fake with confidence score
5. **VISUAL EVIDENCE OUTPUT** — Detailed report with visual evidence

TECHNOLOGY STACK

React.js · Django · MongoDB · PyTorch · OpenCV · Whisper · Docker · GitHub

KEY CAPABILITIES

97%+
Detection Accuracy
High performance across benchmarks

Frame-Level Analysis
Detects manipulation in individual frames

Audio-Visual Sync Check
Identifies inconsistencies between audio & visuals

Secure & Scalable
Enterprise ready with privacy & scalability

PROJECT TEAM

- Abdul Basit (BITF22M512)
- Muhammad Hashir (BITF22M545)
- Khuzaima Bin Shoaib (BITF22M552)
- Muhammad Ali (BSEF22M545)

SUPERVISED BY
Dr Nadeem Akhtar
Associate Professor

FPSEF25X54
Kindly

Group members:

BSEF22M539: *MUSADAQ HANIF*, BSEF22M515: *UMAMA HASSAN*, BSEF22M510: *SARA QADAR*

Supervised by: Dr Nadeem Majeed

Abstract

In Pakistan, lower and middle income families face rising expenses for essential goods, while wealthier households often discard usable items due to a linear consumption model that generates over 49.6 million tons of solid waste annually. This widening gap between surplus and scarcity creates both social and environmental challenges. Our project, Kindly, aims to introduce a community-focused platform designed to bridge this divide by enabling hyperlocal exchange and donation of household items. It's about shifting from 'buy-use-dispose' to 'sharereuse-sustain'. Additionally, the absence of a trustworthy sharing platform, coupled with significant digital literacy and social gaps, limits collaborative solutions. By promoting reuse and fostering collaboration across social classes, the platform seeks to reduce waste, ease financial strain, and cultivate sustainable consumption practices through an inclusive, secure and trustworthy platform strengthening community ties.

Tools & Technologies

- Frontend: React + Next.js (PWA), Tailwind CSS, Shadcn/UI
- Backend: Node.js + Express (APIs, business logic)
- Database & Services: MongoDB + Firebase (auth, chat, notifications)
- DevOps & Hosting: Docker + CI/CD pipelines

Kindly – Community Resource Hub

Offered PKR 3M Funding

Share what you can. Find what you need.

Connecting neighbors to donate and exchange quality household items free, local, always.

THE PROBLEM

A divide that shouldn't exist.

In Pakistan, usable goods go to waste while families nearby go without. Surplus stays locked where it's not needed.

OUR SOLUTION

Kindness, made simple.

Kindly is a free, local platform that helps communities share, exchange, and request household items with ease and trust.

WHAT YOU CAN DO ON KINDLY

1 DONATE GOODS
Give items you no longer need to someone who does.

2 EXCHANGE GOODS
Swap items you have for things you need.

3 REQUEST ITEMS
Ask for items you need and connect with generous neighbors.

4 POST ITEMS
List items for others to discover and benefit from.

PLATFORM HIGHLIGHTS

PWA ENABLED
Install directly from your browser.

REAL-TIME CHAT
Connect instantly with neighbors through in-app messaging.

SAFE & MODERATED
Every post is reviewed to ensure a trusted and respectful community.

HYPERLOCAL NETWORK
Find and share items within your local area.

MEET THE TEAM

Musadaq Hanif
BSEF22M539

Umama Hassan
BSEF22M515

Sara Qadar
BSEF22M510

Be Part of the Change.

- ✓ Share more
- ✓ Waste less
- ✓ Build stronger communities

PWA – Install from browser

Admin Panel – Fully moderated

100% Free – Always

Scan to explore Kindly

kindly-iota.vercel.app

kindlyfyp@gmail.com

FPSEF25X55
ImagineX.ai

Group members:

BSEF22M514: *RAZA ALI*, BSEF22M501: *MUHAMMAD SHAHMEER*, BSEF22M516: *HASSAN IQBAL*

Supervised by: Dr Shuja-ur-Rehman Baig

Abstract

Now a days , there are numerous AI platforms that can be used to generate websites but no platform has the capability to provide a website link deployed on a platform on just one click like fully automating the SDLC (starting from requirements phase to finally deploy the website) and doesn't provide the fully customizable solution. Also, the LLM - human interaction is very less and abstract. So here comes the ImagineX.ai that fully automates SDLC with interactive coding agents and provides user the deployed link of website on just one click (from requirement elicitation to deployment, all is automated through AI agents).

Tools & Technologies

- Frontend: Next.js for server based rendered fast components
- Backend: Fast API (Python API Framework) for fast integration
- Database: MongoDB, Mongoose for flexible storage
- Dev Tools: Git, GitHub, Jira, Docker, Postman, Jest, Azure VM, AWS, Redis for job scheduling ,Figma, Deepgram, Eleven Labs ,Twilio , Whisper,Open AI,Groq, Azure Open AI, Gemini ,Python OCR,Azure AI foundary, Hugging Face,Kaggle, Google Collab, Oracle VM Load balancer, Azure Front door, Nginx (For Future Add-Ons for scalability)

MULTI-AGENT SOFTWARE ENGINEERING SYSTEM · FYP 2025–26

IMAGINEX

imaginex.dev

LANGGRAPH · FASTAPI · E2B SANDBOXES · REDIS STREAMS · NEXT.JS 15 · ELEVENLABS VOICE · MONGODB · CLERK AUTH

One Prompt. Five Agents. Minutes.

Transforms natural language into fully deployed full-stack web applications through an autonomous AI pipeline — no manual steps required.

5	<5 min	2	∞
SPECIALIZED AI AGENTS	PROMPT → LIVE APP	GENERATION PIPELINES	CONCURRENT QUEUE SCALE

Punjab University College of Information and Technology
Dept. of Software Engineering · Final Year Project 2025–26

AUTONOMOUS EXECUTION FLOW

MULTI-AGENT LANGGRAPH PIPELINE

LangGraph stateful graph · Redis job queue · E2B cloud sandboxes
Real-time SSE streaming · Conditional routing with retry logic

USER PROMPT →

01 **REQUIREMENTS** — Parses natural language, extracts features, generates structured specification — NLP → SPEC JSON →

02 **PLANNER** — Selects pipeline path, designs architecture, defines data models & API routes — ARCH → ROUTING →

03 **CODING** — Generates full codebase in isolated E2B sandbox — components, APIs, DB schemas — E2B → CODE GEN →

04 **TESTING** — Runs automated tests, detects runtime errors, self-heals and re-generates failing components — QA → SELF-HEAL →

05 **DEPLOYMENT** — Packages build, deploys to cloud infrastructure, returns live URL — fully accessible — CI/CD → LIVE URL →

LIVE APP

POWERED BY: LANGGRAPH STATE MACHINE · REDIS QUEUE + PUB/SUB · E2B CLOUD SANDBOXES · QDRANT SEMANTIC MEMORY · SSE REAL-TIME STREAMING · CLERK AUTH

OVERVIEW

ABOUT

ImagineX is a **production-grade multi-agent AI system** that autonomously engineers complete web applications from a single natural-language prompt.

Built on **LangGraph**, five specialized agents collaborate through a stateful pipeline — each owning a distinct phase of the software development lifecycle. The system supports **two generation paths**: a Static path (React + Vite + Tailwind) and a Full-Stack path (Next.js 15 + MongoDB).

A **queue-driven, stream-first architecture** powered by **Redis** enables concurrent users with real-time visibility into each agent's reasoning. Code executes in isolated **E2B sandboxes**, ensuring secure and reproducible generation.

EXECUTION FLOW

HOW IT WORKS

`$ Build a CRM with auth, dashboards and real-time analytics`

→ **Full-Stack Next.js app delivered in ~4 minutes**

1. **Requirements Agent** — Extracts features from prompt, generates structured JSON spec with user stories
2. **Planner Agent** — Designs architecture, selects pipeline (static or full-stack), scaffolds project
3. **Coding Agent** — Writes full codebase in E2B sandbox — components, APIs, DB schemas
4. **Testing Agent** — Validates, runs tests, detects errors and autonomously fixes failing code
5. **Deployment Agent** — Builds, deploys to cloud, returns live URL — no manual steps required

GENERATION PIPELINES

DUAL PATH

STATIC PIPELINE — REACT SPA
- React 19
- Vite
- Tailwind CSS 4
- E2B Sandbox
- Framer Motion

FULL-STACK — NEXT.JS
- Next.js 15
- MongoDB
- API Routes
- Complex Data Models

NOVEL CONTRIBUTIONS

- **LangGraph stateful pipeline** with conditional routing, retry loops & human-in-the-loop checkpoints
- **E2B sandboxed execution** for secure, reproducible code generation in isolated agent loops
- **Voice-to-app generation** via ElevenLabs STT — speak your prompt, receive your app
- **Redis SSE streaming** of real-time agent reasoning visible to the end user

FULL TECHNOLOGY STACK

TECH STACK

BACKEND CORE
Python 3.11+ · FastAPI · REST + SSE · Pydantic

ORCHESTRATION & EXECUTION
LangGraph · LangChain · E2B Interpreter · E2B Sandboxes

STATE, QUEUE & STORAGE
Redis · Job Queue · MongoDB · Qdrant Vector

FRONTEND FRAMEWORK
Next.js 15 · React 19 · Tailwind CSS 4 · Framer Motion

FRONTEND DEV & FORMS
Zod Validation · React Hook Form · Lucide React · TypeScript

AUTH, PAYMENTS & VOICE
Clerk Auth · Stripe · ElevenLabs STT · ElevenLabs TTS

GENERATED — STATIC PATH
React 19 + Vite · Tailwind CSS · E2B Execution · Static Deploy

GENERATED — FULL-STACK PATH
Next.js 15 · MongoDB Atlas · REST API Routes · Mongoose ODM

AI MODELS & INFRA
Claude 3.5 Sonnet · GPT-4o · Semantic Search · Vector Embeddings

IMAGINEX

PROJECT TEAM

Syed Muhammad Raza Ali BSEF22M514
Muhammad Shahmeer BSEF22M501
Hassan Iqbal BSEF22M516
Supervisor: Dr. Shuja ur Rehman Baig

imaginex.dev

Punjab University College of Information and Technology
Department of Software Engineering
FINAL YEAR PROJECT · 2025 – 2026

FPSEF25X56

ClosetCircle: An AI-Powered Virtual Closet & Outfit Recommendation App

Group members:

BSEF22M524: *SANA FATIMA*, BSEF22M543: *SAYYIDAH SAKINA*, BSEF22M533: *UNSA SALEEM*

Supervised by: Dr Muddassira Arshad

Abstract

Selecting daily outfits may often feel overwhelming to people due to unorganized closets, limited outfit inspiration or lack of recommendations. Our project introduces ClosetCircle, an AI-powered mobile application that enables users to digitize their closets, automatically categorize clothing, and receive intelligent outfit suggestions tailored to weather and occasion. The system is able to support advanced search and filtering by color, category, and tags while also generating complete outfit combinations (across clothing, headwear and footwear). In contrast to many conventional wardrobe management tools, ClosetCircle combines social sharing capabilities, enabling users to rate and share styles with others in their circle. The application seeks to streamline wardrobe management, encourage self-assured dressing, and improve the overall fashion experience by fusing customization, organization, and community engagement.

Tools & Technologies

- Frontend: React Native (with expo)
- Backend: Python
- Database: Firebase
- Libraries: Fast api, Pandas, tensorflow.keras with ResNet50
- Datasets: Fashion Product Images (small)
- API: OpenWeatherMap, OpenAI
- Dev Tools: VS code, Git, GitHub, Jira, Swagge

ClosetCircle

An AI-Powered Virtual Closet and Outfit Recommendation App

App Preview

Core Features

- AI Outfit Categorization
- Digital Wardrobe
- Chatbot
- Event Planner
- Outfit Sharing
- Smart Recommendation

Team

Dr Muddassira	Sana Fatima	Unsa Saleem	Sayyidah Sakina
Supervisor	Frontend Developer	UI/UX Developer	Backend Developer

Tech Stack

UI Design	Frontend	Backend	Deploy
Figma	Expo	Python	HF Spaces

FYPSEF25X57
DreamAbroad

Group members:

BSEF22M521: *MUHAMMAD ABDULLAH*, BSEF22M531: *HAMZA ZAHOOR*, BSEF22M503: *HAFIZ FURQAN AHMAD*, BSEF22M520: *SAFIULLAH*

Supervised by: Mr. Abdul Mateen

Abstract

Pakistani students seeking international scholarships often face challenges like fragmented information, outdated resources, and insufficient guidance. DreamAbroad tackles these issues by offering a comprehensive digital platform that aggregates verified scholarship opportunities from trusted sources and provides clear, structured support to meet their criteria. Leveraging web scraping technology, AI-driven assistance, and mentorship networks, the platform delivers real-time, accurate, and accessible scholarship information. By breaking down information barriers and providing both automated and tailored guidance, DreamAbroad equips students to make informed choices, craft compelling applications, and enhance their prospects of securing international scholarships. The mission is to democratize access to global education, empowering Pakistani students to pursue higher studies abroad with confidence and clarity.

Tools & Technologies

- Frontend: Next.js, Tailwind CSS, Shadcn UI
- Backend: Nest.js / FastAPI (Scraping & Agentic System), Web Sockets / Firebase (for Chat)
- Database: PostgreSQL, Elasticsearch / Meilisearch, Firebase, Firestore (optional for real-time)
- Dev Tools: Git / GitHub, Postman, Jira

Dream Abroad

Your Gateway to Global Education

SUPERVISOR
Mr. Abdul Mateen

CO-SUPERVISOR
Dr. Arifa Mirza

TECH STACK

NEXT.js nest FastAPI

FYP TEAM
Hafiz Furqan Ahmad
Safiullah
Muhammad Abdullah
Hamza Zahoor

FPSEF25X58

Xeonix: AI-Powered Calling Assistant for Healthcare Appointments

Group members:

BSEF22M512: *MUHAMMAD UMER MASOOD*, BSEF22M535: *MARYAM WAHEED*, BSEF22M542: *ASMA*

Supervised by: Dr. Muhammad Idrees

Abstract

Xeonix — AI-Powered Multilingual Hospital Voice Agent Xeonix will be a web-based hospital management system integrated with an AI voice assistant that will handle patient calls in Urdu, English, and Roman Urdu. It will guide patients through doctor selection, appointment booking, and rescheduling while accessing hospital databases to fetch realtime availability. The system will also send WhatsApp/SMS confirmations and provide dashboards for doctors and admins to track appointments, schedules, and analytics. Xeonix will aim to reduce reliance on human receptionists, improve efficiency, and provide 24/7 multilingual support, serving as a smart assistant rather than a replacement for medical care.

Tools & Technologies

- Frontend: React.js, Bootstrap / Tailwind CSS
- Backend: Django (Python), REST APIs
- Database: PostgreSQL, MongoDB Community Edition (optional for AI
- logs and history), In-memory storage using Python dictionaries / JSON files for AI contextual memory
- AI/ML Models: Rasa Open Source (NLP & dialogue management), OpenAI Whisper (Speech-to-Text), Coqui TTS (Text-to-Speech), Hugging Face Transformers (multilingual models)

Xeonix AI

AI-POWERED MULTILINGUAL HOSPITAL VOICE ASSISTANT

Book Appointments 24/7 in Urdu, English, & Roman Urdu.

UNIVERSITY OF THE PUNJAB
Bachelor of Science in Software Engineering

GROUP MEMBERS:
Muhammad Umer Masood
Maryam Waheed
Asma

SUPERVISED BY:
Dr. Muhammad Idrees,
Assistant Professor

Multilingual Voice Interface

Converses naturally, understanding local dialects.

Real-Time DB Integration

Fetches doctor availability instantly.

Advanced AI Speech Processing (TTS/STT)

Powered by Whisper and Coqui TTS.

Seamless Appointment Booking

Guides patients from selection to confirmation.

WhatsApp & SMS Confirmations

Instant digital confirmations for peace of mind.

Admin/Doctor/Patient Dashboards

Manage schedules and track analytics.

24/7 Available | Multilingual Support | Specialized for Healthcare

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Functional QR Code for Demo Video

https://xeonix.frontend.vercel.app

FPSEF25X59

Personalized Mental Health Support System

Group members:

BSEF22M534: *ZAMEER ALI MUSTAFA*

Supervised by: Ms Mehwish Kayani

Abstract

This project proposes a Personalized Mental Health Support System to address rising student stress in online learning environments. It uses machine learning–based recommendation techniques (collaborative filtering, neural networks, BERT, and multi-armed bandits) to match users with safe, evidence-based coping strategies based on their stress patterns.

Unlike generic wellness apps, it integrates expert-validated mental health knowledge, temporal effectiveness tracking, and human-in-the-loop feedback to ensure clinical safety and relevance. The system also includes explainable AI, uncertainty estimation, and audit logging for transparency and trust. Overall, it aims to provide a scalable, adaptive, and responsible mental health support framework for students.

Tools & Technologies

- Frontend: React + Tailwind CSS
- Backend: FastAPI (Python, ML integration)
- Database: PostgreSQL (structured data) + MongoDB (flexible data)
- ML/NLP & Tools: Scikit-learn, PyTorch, Hugging Face (BERT), LightFM, MLflow
- DevOps & Development Tools: Git, GitHub, Docker, Postman, Jupyter Notebooks

MindCare

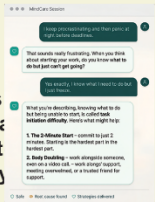
Personalized Mental Health support System

PROBLEM

Limited Student Access To Timely, Personalized Support. Resource Gaps, Stigma, and Acodemic Pressure Go Unoddressed.

SOLUTION

An Agentic AI chatbot that detects crisis, understands context, and delivers clinically-informed support instantly, privately and peersonally



AGENTIC ARCHITECTURE

User Input → Query Processing & Safety Check → Knowledge Base Search (Vector DB/Ontology → Llama 3 (via Groq) & Hugging Face Models → Synthesis and Recommendation → Output

KEY FEATURES

CRISIS TRIAGE
Deterministic Crisis Detection.

INVESTIGATION
Ontology-Guided Conversation.

PERSONALIZED INTERVENTION
Vector-Retrieved Intervention Stategies.

CLINICALLY & USER VALIDATED
Rigarously Tested And Proven With Professional Input And User Data.

TECH STACK

FRONTEND
React, Vite, Tailwind CSS

BACKEND
FastAPI (Python)

AI
groq™ Llama 3 (via Groq)
Hugging Face

DATABASE & VECTOR
supabase (PostgreSQL + pgvector)

TEAM & SUPERVISION

DEVELOPED BY
ZAMEER ALI MUSTAFA

SUPERVISED BY
MS. MEHWISH KAVANI

FPSEF25X60

Street Duel: The Rise of Fighters

Group members:

BSEF22M540: *TASAWAR NAWAZ*, BSEF22M527: *HAFSA IJAZ*

Supervised by: Abdul Mateen

Abstract

The mobile gaming industry is one of the fastest-growing entertainment sectors, with millions of players engaging in quick, action-packed experiences daily. Fighting games, in particular, are popular for their simplicity and excitement, allowing players to test reflexes, timing, and strategy. Our project aims to develop a 3D fighting game using Unity Engine that is accessible, visually engaging, and fun to play. The game will feature a player-controlled fighter battling against an AI-controlled opponent in a vibrant urban background, similar to arcade-style fighting arenas.

Tools & Technologies

- Game Engine: Unity
- Programming Language: C#
- Design Tools: Blender, Photoshop, Illustrator
- Version Control: GitHub
- Platform: Android (landscape orientation)


STREET DUEL
RISE OF FIGHTERS
FIGHT. ADAPT. CONQUER.
A Unity-based 3D arcade fighting game featuring responsive combat mechanics, intelligent AI opponents, and seamless deployment on both web and Windows platforms.
RESPONSIVE COMBAT
INTELLIGENT AI
CROSS-PLATFORM PLAY
FINAL YEAR DESIGN PROJECT
UNITY 2022.3
WEBGL
WINDOWS
C#
DEVELOPED BY Tasawar Nawaz • Hafsā Ijaz
fpsef25x60.itch.io/street-duel

FPSEF25X61
Studymate

Group members:

BSEF22M525: *FATIMA NOOR*, BSEF22M508: *IZEN FATIMA*, BSEF22M517: *FIZZA HAIDER BUKHARI*

Supervised by: Abdul Mateen

Abstract

Students across universities and colleges struggle with massive syllabi, unorganized lecture notes, and the pressure of preparing effectively for exams. Traditional approaches, rereading long PDFs, manual note-making, or relying on scattered online resources, are inefficient and stressful. Studymate offers a smarter way to learn. It is an AI-powered digital study assistant that allows students to upload class materials (PDF, Word, images), automatically extract text with OCR, and generate summaries, key concepts, and interactive Q&A sessions from their own notes. Beyond content management, Studymate includes a personalized study planner that converts syllabi into daily tasks, reducing exam stress. Optional features such as flashcards, quizzes, and concept maps make studying more engaging. Unlike existing tools that are either too generic (e.g., Notion, ChatGPT) or limited (e.g., Quizlet, OCR apps), Studymate is interactive, adaptive, and tailored specifically for students. Its mission is to make studying efficient, enjoyable, and accessible to every learner.

Tools & Technologies

- Frontend: React, Tailwind CSS
- Backend: Django REST Framework
- Database: PostgreSQL, Vector Database (FAISS or Pinecone)
- AI and NLP: Hugging Face Models (T5, BART), KeyBERT, Retrieval-Augmented Generation OCR Tesseract, EasyOCR, pdfplumber, Cloud AWS or Firebase (for storage and hosting

StudyMate
Learn Smarter, Not Harder with AI

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Department of Software Engineering

Learn Smarter, Not Harder with AI.

StudyMate reimagines how students learn by fusing intelligent automation, adaptive personalization, and a powerful suite of AI study tools into one seamless, galaxy-class platform for sustained academic excellence.

CORE LEARNING FEATURES

Knowledge Spaces

Organize your entire curriculum into isolated subject environments, each grounded in your own documents for precision-targeted, context-aware AI study.

AI Chatbot Tutor

RAG-powered conversational AI via Groq LLM always grounded in your uploaded materials, delivering pinpoint answers with document precision.

Quizzes, Flashcards & Summaries

Auto-generated MCQs with instant feedback, mastery-adaptive flashcards that evolve with your performance, and AI summaries built for deep retention.

Mind Maps

Dynamically generated visual knowledge hierarchies transforming complex document structure into intuitive, crystal-clear conceptual maps for instant clarity.

Study Planner

AI-crafted day-by-day learning schedules with automated task enforcement keeping every deadline and academic goal precisely on track.

Prep Hub

Goal-oriented exam roadmapping with curated resource curation- your intelligent command center for high-stakes preparation and peak academic performance.

Analytics & Gamification

Track learning velocity, daily streaks, and activity heatmaps in real time while AI-powered insights keep you relentlessly engaged and improving.

Collaboration

Real-time synchronized chat via WebSockets and structured timed study sessions enabling cohesive group learning with shared focus and collective accountability.

STUDY SMARTER. ACHIEVE FASTER.
Scan to explore StudyMate or begin your smarter learning journey today.

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FPSEF25X62
Smart Shopping Cart

Group members:

BSEF22M504: *LAIBA KHALID*, BSEF22M507: *HAIQA KHAN*,
BSEF22M528: *AYESHA SHAHID*

Supervised by: Dr Madiha Khalid

Abstract

The Smart Shopping Cart is a software-based solution designed to transform the traditional retail shopping experience by integrating real-time purchase tracking with efficient inventory management. The system addresses key retail challenges such as long checkout queues, customer overspending issues, and inefficient stock handling. By equipping shopping carts with RFID/barcode scanning and a live display system, customers can track their purchases, view updated totals, and enjoy faster checkout. Additionally, a Budget-Friendly AI Recommendation System is included to analyze the customer's cart and suggest affordable alternatives whenever they approach or exceed their budget. For retailers, the system synchronizes inventory automatically, reduces manual staff workload, and provides timely alerts for low-stock items. This innovative solution not only enhances customer convenience but also helps shoppers make cost-effective decisions while improving operational efficiency for store management.

Tools & Technologies

- Frontend: HTML+CSS(Bootstrap),React, Java script
- Backend: C# (Asp.Net)
- Database: MySQL
- Dev Tools: Git, GitHub, Docker, Postman, Visual Studio

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FPSEF25X62

SmartShoppingCart

Shop Smarter. Spend Wiser.

Scan items. Track your budget. Get smarter suggestions — all in real time.

Laiba Khalid · Haiqa Khan · Ayesha Shahid
Supervised by: Dr. Madiha Khalid

HOW IT WORKS

STEP 1

Set Your Budget

STEP 2

Scan Products

STEP 2

Shop Confidently

KEY FEATURES

Scan Anything

Live Budget Tracker

Smart Spending Lock

Budget Alternatives

Product Images

Stock Alerts

Try it live

smartshoppingcart.vercel.app

No login required. Just open and scan.

Scan to open the app

FPSGF25X63
Health Monitoring Hub

Group members:

BSEF22M518: *MADIHA SADAQAT*, BSEF22M530: *HAFSA AKHTAR*, BSEF22M536: *HOORIA LAIBA*

Supervised by: Dr Muddassira Arshad

Abstract

The Health Monitoring Hub is a web-based application that analyzes patient blood test reports and generates understandable insights. Using machine learning, the system diagnoses potential health problems, highlights abnormalities, and provides lifestyle and dietary suggestions. Additionally, with the integration of OpenAI, it generates possible prescription recommendations (for educational support, not a replacement for doctors). The platform also maintains user history with graphical trends, helping patients monitor health over time.

Tools & Technologies

- Frontend: React, HTML, CSS, Tailwind/Bootstrap
- Backend: Node.js + Express
- Database: PostgreSQL
- Dev Tools: Git, GitHub, Postman
- Machine Learning: Python (Scikit-learn, TensorFlow/Keras, Pandas)
- AI support: OpenAI API (for prescription recommendations)
- Hosting: Cloud Services

Health Monitoring Hub
AI-Powered CBC Blood Report Platform

Built with AI

Health Monitoring Hub

HMH

Upload your CBC report and get clear, easy-to-understand insights powered by AI. No medical jargon, just clarity & control.

Start Free Analysis | Explore →

CBC Report Analysis
Upload your CBC report and get AI-powered insights in simple terms.

Patient History Tracking
Store and manage all your past reports securely in one place.

Graph Trends Visualization
Visualize your health trends with interactive graphs and charts.

Secure & Private
Your data is encrypted and kept 100% private and secure.

Download Reports
Download analyzed reports in PDF format and share with your doctor.

AI-Powered Insights
AI helps detect patterns and highlight what matters most.

• Why Choose Health Monitoring Hub? •

Accurate Analysis
AI reads your CBC reports with high accuracy.

Save Time
Get results in seconds, anytime, anywhere.

Better Health Insights
Analyze reports and make informed decisions.

• MEET THE TEAM BEHIND THE MISSION •

Hafsa Akhtar
Frontend Developer (Team Lead)
Building clean and responsive interfaces for a seamless user experience.
Leading system integration, managing workflows, and ensuring CI/CD pipeline deployment practices.

Madiha Sadaqat
Backend Developer (OCR & APIs)
Building robust APIs with OCR integration and secure systems to power the platform.

Hooria Laiba
ML / AI Engineer
Training AI models to analyze data and generate accurate insights.

Try Health Monitoring Hub free

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No subscription. No credit card.
Just better health.

Scan to get started

AI-Powered | CBC Report Analysis | Trends & History | Secure & Private | CI/CD Enabled

FPSEF25X64

Agentic DermaSol – An AI-Powered Dermatology Assistant for Asian Skin

Group members:

BSEF22M506: *HAMNA ALI*, BSEF22M532: *AIMEN IJAZ*, BSEF22M538: *HAMNA HASHMI*

Supervised by: Mr Farhan Ahmad Ch & Dr Amina Mustansir

Abstract

Agentic DermaSol is an AI-powered dermatology assistant designed for Asian skin tones. It uses computer vision (CNNs + Vision Transformers) to detect common skin conditions such as acne, eczema, and hyperpigmentation from uploaded images, and combines NLP to interpret userprovided symptoms and history. Using retrieval-augmented generation (RAG), it recommends locally available skincare products and provides evidence-based guidance while highlighting safety disclaimers. Unlike existing Western-trained dermatology AI systems, DermaSol focuses on melanin-balanced datasets to reduce bias and enhance detection accuracy for diverse Asian populations.

Tools & Technologies

- Frontend: React + TailwindCSS
- Backend: Django REST Framework
- Database: PostgreSQL / MongoDB
- Dev Tools: GitHub, Postman, Docker

DermaSol
AI Dermatology

Smart Insights. Healthier Skin.

AI-Driven Dermatology Intelligence

DermaSol uses advanced artificial intelligence to analyze skin images and symptoms, providing preliminary insights to support early detection and informed decisions.

AI-Powered
Advanced models for accurate skin analysis

Secure & Private
Your data is protected with best practices

Fast & Efficient
Get results and insights in seconds

Dermatology Focused
Built by integrating clinical knowledge

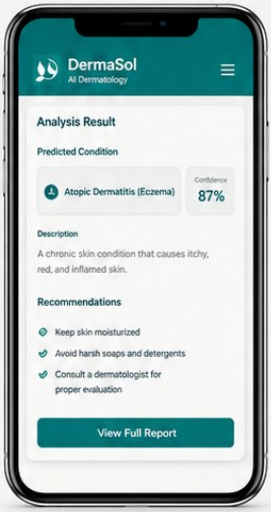
KEY FEATURES

Multimodal Analysis
Analyzes skin images and symptoms together for better accuracy

AI-Powered Insights
Machine learning models provide probable conditions and suggestions

Detailed Reports
Easy-to-understand results with recommendations and next steps

User Friendly
Designed for both professionals and general users



WHY DERMASOL?

Early Detection Support
Helps identify potential skin issues early.

Better Care Access
Improves access to preliminary skin care insights.

Reduces Workload
Streamlines initial assessments for healthcare professionals.

Promotes Awareness
Educates users about skin health and conditions.

Start Your Skin Analysis Today
Smart Technology. Healthier Tomorrow.

Clinically-Informed AI | Secure & Confidential | Web-Based & Accessible | Scalable & Reliable

Scan to Learn More

FPSEF25X65

IntelliHire: AI Powered Platform to Automate and Facilitate the Hiring Process

Group members:

BSEF22M513: *FAREHA ILYAS*, BSEF22M526: *NOOR FATIMA*, BSEF22M523: *ANEEBA WASEEM*

Supervised by: Dr Madiha Khalid

Abstract

We are building an AI-powered interview assistant that conducts live technical interviews for computer science domain. It interacts naturally with candidates using speech-to-text (STT) and text-to-speech (TTS), giving the feel of a real interviewer. To the candidate, it feels like talking to a real recruiter, with voice creating a human-like experience. The system evaluates answers and analyzes facial expressions, voice tone, and body language to assess confidence and engagement. Finally, it generates a structured report with scores and insights, making the interview process more scalable, unbiased, and efficient.

Tools & Technologies

- Frontend: React.js (UI), WebRTC (video/audio capture)
- Backend: Node.js (API orchestration), RAGs for Resume data chunks, Gemini 2.5 Pro (LLM – question generation & answer evaluation), ElevenLabs (STT + TTS)
- Database: Vector Database
- Dev Tools: Git, GitHub, Docker
- Collaboration & Project Management: Jira (task & sprint tracking)
- Slack (team communication)

INTELLI HIRE

AI-POWERED RECRUITMENT

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NEXT-GENERATION HIRING PLATFORM

THE FUTURE OF HIRING IS HERE.

Intelligent automation meets human-centric design, transforming how companies assess and hire the best talent.

CORE CAPABILITIES

INTERVIEW SCHEDULING

Seamlessly coordinate interview slots with smart calendar integration — no back-and-forth emails.

RESUME SCREENING

AI parses resumes instantly - ranking candidates by role fit.

PERSONALIZED JDS

Allows personalized job descriptions by adding role, domains, tech stacks and requirement.

AI BOT INTERVIEWER

Our conversational AI conducts structured interviews, adapting questions in real-time based on responses.

EVALUATION REPORTS

Detailed report highlighting domain wise scores and hire/ no-hire recommendations.

ENTERPRISE-GRADE SECURITY

End-to-end encryption, role-based access control and secure data handling. Every candidate interaction remains private and secure.

EFFICIENT TALENT ACQUISITION | REDUCED TIME-TO-HIRE | AI POWERED EFFICIENCY | AUTOMATED INSIGHTS

HIRE SMARTER. HIRE FASTER.

Scan to learn more or visit intellihire.ai

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RemoteHire.io

Group members:

BSEF22M505: *HAFIZ SHEIKH ABDULLAH ARSHAD*, BSEF22M546: *MUHAMMAD BILAL KHAWAR*

Supervised by: Mr Farhan Ahmad Ch

Abstract

RemoteHire.io aims to modernize and secure the digital hiring process by developing an intelligent recruitment platform that leverages AI-powered CV analysis, deepfake detection in video interviews, and real-time coding assessments. The system enables organizations to conduct efficient, transparent, and fraud-free remote hiring. Recruiters can query large candidate pools using natural language, verify authenticity through AI-based video analysis, and evaluate technical skills in real-time,all within a unified web platform. The product significantly reduces manual screening time, enhances recruitment accuracy, and ensures integrity in virtual hiring.

Tools & Technologies

- NLP Frameworks: spaCy, Hugging Face Transformers
- LLMs / AI APIs: OpenAI (GPT models), Google (Gemini)
- Vector Databases (for semantic search): Pinecone, Weaviate
- Search Engines: Elasticsearch

RemoteHire.io

AI-Based Recruitment Platform for Smart Hiring

PROBLEM STATEMENT

Traditional hiring is slow, biased, and vulnerable to cheating in remote interviews

SOLUTION

An AI-powered platform enabling secure, intelligent, and automated hiring

KEY FEATURES

- AI Resume Matching (LLM-based CV scoring)
- Live Video Interviews (WebRTC-based)
- Deepfake Detection (real-time identity verification)
- Built-in Coding IDE for technical assessments
- Smart Interview Scheduling

SMART, SECURE & INTELLIGENT HIRING ECOSYSTEM

TECHNOLOGY STACK

React | Django | WebRTC

AI/ML Models | LLM Integration | Cloud Deployment

UNIQUE VALUE PROPOSITION

Ensuring Authentic, Intelligent, and Scalable Remote Hiring

TEAM MEMBERS

BSEF22M505- Sheikh Abdullah Arshad

BSEF22M546- Muhammad Bilal Khawar

UNIVERSITY

Faculty of Computing and Information Technology
Punjab University

SUPERVISOR

Professor
Farhan Ahmad Chaudhary