

# Collaborative Hackathon Fall 2025

**Pick one of the four listed problems**

**Best of luck**

**Click each topic for details and judging criteria**

1. [SkillMatch AI – Smart Career Path Recommender](#)
2. [SmartAid – AI-Enabled Medication Monitoring System](#)
3. [SmartRetail – Real-Time Shelf Analytics](#)
4. [Mind in Focus: Detecting Student Fatigue and Distraction](#)

# 1. SkillMatch AI – Smart Career Path Recommender

**Theme:** EdTech | AI | Career Analytics

**Problem:** Students often struggle to identify skills relevant to industry needs or select proper career paths.

## Overview

A web or mobile platform that analyzes a student's résumé, LinkedIn, or GitHub to extract skills using NLP and recommend suitable courses, internships, and mentors using AI-based career mapping.

## Core Tech Stack:

- Backend: Python (FastAPI / Flask) or Node.js
- AI/NLP: SpaCy / BERT for résumé parsing & skill extraction
- Recommender System: Cosine similarity / ML clustering
- Frontend: React / Streamlit
- Cloud: Firebase / AWS

## Business Focus

University career services integration or B2C AI career coaching subscriptions.

## Judging Criteria

AI Accuracy of Recommendations	20%
UI/UX clarity and flow	20%
Market Viability / Scalability	20%
Presentation & storytelling impact	30%
<b>Collaboration:</b> Level of effective collaboration between NTPU and VSU students. To qualify, teams must have members from both the universities	10%

## 2. SmartAid – AI-Enabled Medication Monitoring System

**Theme:** HealthTech | IoT | AI for Good

**Problem:** Elderly and chronically ill patients often forget doses or take incorrect pills, leading to health risks.

### Overview

An AI app that uses a camera to identify pills, verify intake, remind users, and notify caregivers in real time if doses are missed, bridging the gap between healthcare and home automation.

### Core Tech Stack:

- Frontend: Flutter / React Native
- AI/ML: TensorFlow Lite / YOLOv8 for pill identification
- Backend: Firebase / Node.js for data sync
- Notifications: Twilio SMS / voice API for alerts

### Business Focus

Subscription-based solution for eldercare homes, hospitals, or pharmacy integration.

### Judging Criteria

- Feasibility of Prototype (demo on mock dataset)
- Impact on Healthcare Accessibility
- Design usability for elderly users
- Integration readiness with IoT or healthcare APIs

Feasibility of Prototype (demo on mock dataset)	20%
Impact on Healthcare Accessibility	20%
Design usability for elderly users	20%
Integration readiness with IoT or healthcare APIs	30%
<b>Collaboration:</b> Level of effective collaboration between NTPU and VSU students. To qualify, teams must have members from both the universities	10%

### 3. SmartRetail – Real-Time Shelf Analytics

**Theme:** Retail Intelligence | Computer Vision | Edge AI

**Problem:** Retail stores face losses due to misplacement, stock-outs, and expired items on shelves.

**Overview:**

An AI-powered shelf-monitoring system that uses real-time camera feeds to detect missing or misplaced products, count stock levels, and identify expired items for store staff alerts.

**Core Tech Stack:**

- Vision Model: YOLOv8 / YOLOv12 with DeepStream SDK
- Edge Hardware: NVIDIA Jetson / Raspberry Pi
- Backend: MQTT or Firebase for IoT sync
- Dashboard: Streamlit / React analytics panel

**Business Focus:**

B2B service for supermarkets, convenience chains, or logistics warehouses.

**Judging Criteria:**

Accuracy of detection (missing/expired products)	20%
Real-time processing (edge AI performance)	20%
Business scalability and deployment feasibility	20%
Presentation clarity and prototype usability	30%
<b>Collaboration:</b> Level of effective collaboration between NTPU and VSU students. To qualify, teams must have members from both the universities	10%

## 4. Mind in Focus: Detecting Student Fatigue and Distraction

**Theme:** Build an intelligent assistant that helps students and knowledge workers maintain focus and avoid cognitive fatigue during long study or coding sessions.

**Problem:** Modern learners spend hours switching between coding, reading, Audio/Video lectures, and research while often unaware of their mental fatigue level or distractions which tend to degrade performance.

Your task is to design (and partially prototype) a system that can detect, analyze, and respond to signs of mental fatigue or distraction, and suggest personalized interventions (e.g., “take a 10-minute walk”, “time for a short break”, “refocus: you’ve switched apps too often”). These are just a few ideas, you can think about other and more interesting and effective measures.

You are not expected to build the complete application during the Hackathon duration, instead, you should be able to present:

- A clear design of how the system works (data sources, flow, interaction)
- A UI/UX prototype (mobile and/or desktop)
- A technical feasibility report (what libraries, APIs, models they would use, and evidence that they can do what’s claimed)
- A demonstration or simulation of one or two core features (e.g., mock face-tracking, distraction alert simulation)
- A future implementation roadmap outlining how the prototype could be expanded into a full application beyond the Hackathon timeframe

### Judging Criteria

<b>Innovation:</b> Novelty of features, creativity in concept, and smart use of available data sources and technologies.	30%
<b>Quality of App Design:</b> Quality of the overall design, including interface clarity, data and process flow, usability, and coherence between the mobile and desktop components.	30%
<b>Demonstration &amp; Presentation:</b> Clarity of presentation, quality of mock demo or prototype, and how convincingly the team communicates their idea, technical reasoning, and Q&A	30%
<b>Collaboration:</b> Level of effective collaboration between NTPU and VSU students. To qualify, teams must have members from both the universities	10%