**CSCI417 Project Ideas**

**Education Track**

1. **Quiz Analyzer**: Develop a simple system to analyze the results of quizzes taken by students online to identify common areas of difficulty.
2. **Essay Grader**: Create a basic tool that grades short essays based on language simplicity, grammar, and spelling.
3. **Study Resource Recommender**: Given a student’s past quiz performance, recommend relevant study materials (e.g., topics, YouTube links, or textbook sections).

**Medical Track**

1. **Health Survey Analysis**: Analyze data collected from simple health surveys filled out by participants to identify common health trends.
2. **Sleep Quality Study**: Use data collected from surveys about sleep times and quality, analyzing factors that affect sleep.
3. **Predict jaundice children**: from images classify babies with jaundice and no jaundice.
4. **Stress Level Classifier**: Classify text responses (like journals or survey entries) into “low,” “medium,” or “high” stress.
5. **Basic Symptom Checker**: Build a rule-based + ML hybrid tool that suggests possible conditions from self-reported symptoms.

**Coding Track**

1. **Code Quality Assessor:** Build a tool that scrapes code repositories and uses machine learning to assess code quality and suggest improvements.
2. **Bug Prediction in Software Development:** Develop a system that analyzes commit history and bug reports from software repositories to predict future bugs.
3. **Duplicate Code Detector**: Use similarity detection (e.g., cosine similarity on embeddings) to flag duplicate or very similar functions.

**Smart Driving Track**

1. **Traffic Data Analysis**: Analyze traffic volume data collected manually from a busy junction to predict peak times.
2. **Holes recognition**: Collect data to classify streets with holes and well-paved streets
3. **Parking Lot Usage Analyzer**: Use simple data collection on parking lot usage to determine the busiest times and days.
4. **Fuel Efficiency Tracker**: Create a tool that allows users to input their travel distance and fuel usage to calculate their car's fuel efficiency.

**Environment Track**

1. **Air Quality Predictor**: Predict AQI level (good / moderate / poor) using features like weather and traffic data.
2. **Waste Sorting Classifier**: Use images to classify waste into categories (plastic, paper, organic).

**Sports & Fitness Track**

1. **Workout Recommender**: Suggest exercises based on user fitness level and goals (e.g., cardio vs. strength).
2. **Step Counter Trend Analyzer**: Predict future steps taken using past wearable device logs.
3. **Game Performance Predictor**: Predict outcome of a simple sport (e.g., basketball free throw success) from recorded player stats.