Selected AI Project Ideas

1. Intelligent Credit Risk Scoring Using Multi-Modal Deep Learning and Explainable AI

Objective:
Build a deep learning system that predicts a person's credit risk (i.e., likelihood to default on a loan) using both structured financial data (like income and credit score) and unstructured data (like scanned documents, emails, and notes).

Key Features:
- Multimodal fusion of structured and unstructured data.
- Use of Explainable AI (XAI) techniques to ensure model transparency.
- Emulates how human loan officers assess applications using multiple data sources.

Real-World Scenario:
A bank evaluating a loan application considers:
• Applicant's financial records (numerical/tabular data)
• Text documents: payslips, contracts, customer service emails
• Regulatory requirements: explanations for decisions

Example Output:
"Loan denied because:
• Debt-to-income ratio is high
• Contract indicates temporary employment
• Email mentions recent financial hardship"

2. Personalized Cancer Treatment Recommendation using Genomics

Objective:
Recommend personalized cancer treatments by analyzing a patient's genomic profile (mutations, gene expression) and referencing biomedical literature and clinical data.

Key Features:
- Analyze genomic data (structured) alongside scientific literature (NLP).
- Identify effective drugs tailored to patient mutation profiles.
- Bridge the personalization gap in cancer treatment using AI.

Challenges & Value:

• Cancer is highly heterogeneous — same type, different responses.

• Treatment guidelines are often too generalized.

• Integrates data science with NLP-based literature mining to personalize therapy.