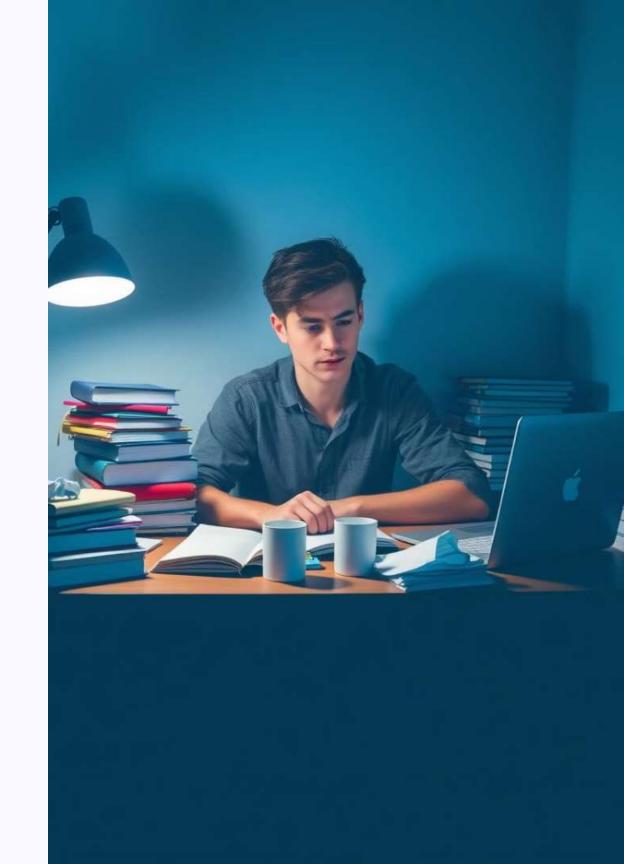# Predicting Student Depression Using Deep Learning

A data-driven approach to identify at-risk students and improve mental health support.

Using deep learning, this project analyzes behavioral patterns to enable early intervention and provide meaningful support within educational institutions.

by: Shiva Sankar Dasari

The Real-World Scenario

Rising Mental Health Issues

More students face stress, anxiety, and depression.

Overwhelmed Counseling

Manual screenings can't scale to growing demand.

Data-Driven Solution

Use behavioral and academic data to predict depression early.

The Deep Learning Approach (with ML Baseline)

Goal:

To train a reproducible and explainable deep learning model that predicts whether a student is experiencing depression based on survey data.

If successful, this model will support proactive outreach.

Experiment Setup

Task: Binary Classification (Depressed vs Not Depressed)

Models Used

- Logistic Regression (baseline)
- Deep Learning: MLP, MLP + Dropout + BatchNorm

Frameworks and Evaluation

Frameworks: Python, PyTorch, Scikit-learn

Evaluation Metric: F1 Score = 86%

Value of the Project

Practical Benefits

- Prioritize high-risk students

- Early warning for mental health support

- Data-driven wellness interventions

Non-Monetary Value

- Reduced emotional distress

- Improved academic performance

- Efficient resource allocation

Dataset and Suitability

Dataset: [Student Depression Dataset from Kaggle](#)

Size: 27,901 records with 18 features

Features:

ID	Gender	Age	City	Profession
Academic Pressure	Work Pressure	CGPA	Study Satisfaction	Job Satisfaction
Sleep Duration	Dietary Habits	Degree	Suicidal Thoughts	Work/Study Hours
Financial Stress	Family History of Mental Illness	Depression		

Why it's suitable:

- Real-world, clean, and balanced dataset for binary classification
- Captures academic, lifestyle, and mental health indicators
- Not part of any lecture dataset (meets portfolio rules)

Thank you for reviewing this pitch.