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## □ Task: "Build & Judge a Mini AI"

### Part 1 — Chronology of AI

- \* Write **one real-world example** for each stage:
    - Machine Learning → spam mail detection
    - Deep Learning → self driving cars
    - Computer Vision → facial recognition passcode on smartphones
    - NLP → google translate
    - LLMs → chatbots like chatgpt, gemini
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### Part 2 — Deep Learning Architectures

- \* Match the model to the use case:
    1. **RNN** - Early speech-to-text systems
    2. **LSTM** - Text translation (old Google Translate)
    3. **CNN** - Image recognition
    4. **Transformer** - Predicting the next word in ChatGPT
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### Part 3 — Frameworks

- \* Choose one framework (PyTorch / TensorFlow / Keras).
- \* In **one sentence**, explain why you would use it if you were a student making a cat-vs-dog classifier.

Ans: Keras. It is free, simple and ready-to-run for small scale CNN models like cat-vs-dog classifiers.

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### Part 4 — Evaluation Metrics

- \* Imagine you built a spam filter. Answer:
  - **Precision:** If it marks 10 emails as spam and 7 are truly spam → what's Precision?  
Ans : 70%  
 $[TP/TP+FP] \rightarrow [7/7+3] \rightarrow 0.7$
  - **Recall:** If there were 12 spam emails in total, how many did it catch? (use same example)  
Ans: 100%  
 $[TP/TP+FN] \rightarrow [7/7+0] \rightarrow 1$
  - **F1 Score:** Use the formula and calculate (round to 2 decimals).  
Ans: 82%  
$$F1 = \frac{2 * (precision * Recall)}{Precision + Recall}$$
$$F1 = \frac{2 * (.7 * 1)}{(.7 + 1)}$$
$$F1 = 1.4 / 1.7$$
$$F1 = .82$$
  - **MSE/MAE:** Predict your friend's age (actual = 15, prediction = 18). Which metric punishes the error more?  
Ans: MSE  
error= 3  
 $MAE = |3| = 3$   
 $MSE = 3^2 = 9$

◦ **BLEU/ROUGE:** AI translated "The cat sat on the mat" as "Cat is on the mat." Which metric (BLEU/ROUGE) do you think would give a high score?  
Ans: ROUGE

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## **Part 5 – Responsible AI & Explainability**

- You built an AI that predicts loan
- approvals. A customer asks, "Why was my loan rejected?"

Write **one simple way** to explain the decision fairly (e.g., "Your income was too low compared to the loan size").

Ans:

Your loan application has been rejected and could not be approved because your CIBIL score was too low to credit a loan.

Specifically:

1. There have been late or missed repayment from your side previously.
2. There have been multiple recent loans or credit applications, which puts a risk of repayment.

