# “Build & Judge a Mini AI”

**Part 1 — Chronology of AI**

Write one real-world example for each stage:

* Machine Learning →Credit Card Fraud Detection by Banks
* Deep Learning →Automatic speech recognition
* Computer Vision →Self-driving cars
* NLP →Customer service chatbots
* LLMs →Google Gemini

**Part 2 — Deep Learning Architectures**

Match the model to the use case:

* RNN→Early speech-to-text systems
* LSTM→Text translation (old Google Translate)
* CNN→Image recognition
* Transformer→Early speech-to-text systems

**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.

→ I would use Keras because it is simple, high-level API that let me build and train deep learning models with just few lines of code, so I can focus on understanding the concepts.

**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?

**→ 7/10 = 0.70 (70%)**

* Recall: If there were 12 spam emails in total, how many did it catch?

**→7/12 = 0.58 (58%)**

* F1 Score: Use the formula and calculate (round to 2 decimals).

→ 2\*(Precision \* Recall) / (Precision + Recall)

2\*(0.70 \* 0.58) / (0.70 + 0.58)

2\*(0.406 / 1.28)

**0.63**

* MSE/MAE: Predict your friend’s age (actual = 15, prediction = 18). Which

metric punishes the error more?

→Error = 18 – 15 = 3

**MAE = |3| = 3**

**MSE = 3\*3 = 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?

→ BLEU focuses on n-gram overlap while ROUGE focuses on recall

**Therefore, BLEU would give a higher score**

**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”).

* Your loan application was carefully reviewed using multiple financial factors.
* One key reason for rejection was that your **income was too low** compared to the **loan amount requested**.
* The system also checks your **existing debts and credit history**, which may have impacted the result.
* We aim to ensure loans are affordable and manageable for all customers.
* You’re welcome to reapply with updated financial information or a smaller loan amount.
* For a detailed breakdown, we can provide a summary of the decision criteria used.