Meow AI: Resource Protocol
Strategies for Acceleration & Problem Solving

Meow AI Team Standard Operating Procedure

1 The "3-Step Rule" for Errors

Before asking a teammate "It doesn't work," you MUST follow this protocol:

> **Protocol 1: How to Debug**
>
> 1. **Read the LAST Line:** Python errors are verbose. The actual problem is usually in the very last line of the error message (e.g., `RuntimeError: CUDA out of memory`).
>
> 2. **The Google Dork:** Copy that last line + the library name into Google.
>
>   - *Bad:* "My AI code is broken."
>   - *Good:* "RuntimeError size mismatch m1: [64 x 768] m2: [1024 x 768] pytorch linear layer"
>
> 3. **Check GitHub Issues:** Go to the official repository of the tool (e.g., Hugging Face Transformers) and search the "Issues" tab. Someone else has definitely had your problem before.

2 The Toolbox (Direct Links)

Bookmark these. Do not search for them every time.

- 🧠 **Models & Libraries**
  - **Hugging Face Hub:** https://huggingface.co/models
    (Search for `Salesforce/blip2-opt-2.7b` or `lmsys/vicuna-7b`).
  - **Transformers Docs:** https://huggingface.co/docs/transformers/index
    (The Bible for our project).
  - **PEFT (LoRA) Docs:** https://huggingface.co/docs/peft/index
    (Essential for fine-tuning on free GPUs).

- 🗄 **Free Compute**
  - **Kaggle Kernels:** https://www.kaggle.com/code
    (Select "New Notebook" → Settings → Accelerator → GPU T4 x2).
  - **Google Colab:** https://colab.research.google.com/
    (Runtime → Change Runtime Type → T4 GPU).

- 🗃 **Data**
  - **RAF-CE Official:** http://whdeng.cn/RAF/model4.html
  - **RAF-DB (Backup on Kaggle):** https://www.kaggle.com/datasets/shuvoalok/raf-db-dataset

3 How to Work 2x Faster

Acceleration Strategy

1. Don't Train from Scratch (Transfer Learning)

- Never initialize random weights. Always use `.from_pretrained()`.

- We only teach the model the *new* task (Emotions), not how to see (Visual Encoder) or speak (LLM). Freeze those parts!

2. Fail Fast (The 1-Batch Rule)

- Before launching a 10-hour training run, set `epochs=1` and use only **10 images**.

- Verify the code runs and saves the output. Only then run the full dataset.

- *Why?* It hurts to wait 5 hours only to crash on the last line.

3. Parallel Processing

- **Dhia** works on the App UI *while* **Mohamed** trains the model. Use dummy data (fake text) in the App until the real model is ready.

4 Emergency Protocols

⚠ Code Red: "It worked yesterday, but not today!"

Cause: You probably changed a library version or a file path.

- **Fix 1:** Check `requirements.txt`. Did someone update a package?

- **Fix 2:** Check 'git log'. What changed in the code since yesterday?

- **Fix 3:** "Restart Runtime" in Colab. Sometimes the GPU memory just needs a flush.

⚠ Code Red: "Git Merge Conflict"

Action: STOP. Do not panic.

- Open the file in VS Code. It will highlight the conflict in colors.

- Choose "Accept Incoming Change" or "Accept Current Change".

- Communicate: Call the person who wrote the other code.