Introdution

**Environment:**

Google Colab, T4-GPU

**Procedure:**

1. **Unzip the dataset**  
   Uncompress the Tower.zip file.
2. **Upload to Google Drive**  
   Upload the entire **Tower** folder to your Google Drive under the following path:

/content/drive/MyDrive/

1. **Ensure the folder structure appears as follows:**

Tower/

├── images/

│ ├── train/

│ │ ├── img1.jpg

│ │ └── ...

│ └── val/

│ ├── img101.jpg

│ └── ...

│

├── labels/

│ ├── train/

│ │ ├── img1.txt

│ │ └── ...

│ └── val/

│ ├── img101.txt

│ └── ...

│

├── data.yaml # Dataset config file:

│ # - paths: Defines train and val image directories

│ # - nc: Number of classes

│ # - names: List of class names

│ # - anchors: Anchor box sizes

│

└── hyp.yaml # Custom hyperparameters

1. **Train the model in Google Colab**  
   Open Google Colab, run the train.py cell, and allow access to Google Drive when prompted.
2. **Retrieve training results**  
   After training completes, a zip file named runs.zip will be saved in your Drive at:  
   /content/drive/MyDrive/Tower
3. **Model training outputs**  
   The training results (e.g., weights, logs) are saved at:

/runs/train/tower

**Notes:**

1. **Avoid re-running the YOLOv5 install cell multiple times**  
   Running the YOLOv5 install cell more than once may re-clone the repository into a nested path like

/content/yolov5/yolov5/...

which can cause import and path issues.

1. **If training is paused and you rerun the training cell, it may create a new results folder with a different name**  
   For example, instead of saving results under /runs/train/tower, it may create /runs/train/tower2, /runs/train/tower3, etc.

To continue training or avoid confusion, make sure to manage folder names and checkpoints properly.

1. **The --cache ram option in the training cell can be removed if GPU RAM is insufficient or causes memory issues**  
   This flag loads the dataset into RAM to speed up training, but if your environment has limited memory, it's safe to remove it to prevent crashes or out-of-memory errors.