**Model Training Guide**

**1. Training Data Preparation**

**1.1 Setting Up Your Roboflow Environment**

1. Create and log in to your account at [Roboflow](https://roboflow.com/)
2. Create a new project
3. Select "Semantic Segmentation" as your project type

图形用户界面, 应用程序

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**1.2 Uploading and Annotating Images**

1. Follow the website guide to upload your images for annotation
2. Click "Classes & Tags" on the sidebar to create the classes you need for segmentation
3. Navigate to the "Annotate" section

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1. **Recommendation**: Use the "Smart Polygon" tool for efficient annotation, which can significantly reduce annotation time

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1. Complete the annotation process for all uploaded images

**1.3 Dataset Versioning and Export**

1. Click "Versions" on the sidebar to export your dataset
2. Split your dataset into three parts:
   * Training set
   * Validation set
   * Test set
3. Resize all images to 1024×1024 pixels
4. Apply appropriate data augmentation (recommended to enhance the model's generalization capabilities)

图形用户界面

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1. Export the dataset in "Semantic Segmentation Masks" format
2. Download the exported dataset

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**2. Model Training Setup**

**2.1 Project Directory Organization**

1. Open the project folder
2. Locate the "SegmentModelTraining" folder in the root directory
3. Open the "MetalMarcy" folder as an example (or your specific project folder)
4. Create a new folder named "dataset" within your project folder
5. Unzip your downloaded dataset into this newly created folder

**2.2 Training the Segmentation Model**

1. Open the "train.py" file
2. Edit the file parameters to fit your dataset requirements (refer to the detailed code comments)
3. Run the script to start training your segmentation model
4. Wait for the training process to complete

**3. Deploying Your Model**

1. Locate your saved best model
2. Follow the guidance in the project's GitHub repository README.md file to:
   * Place and rename your model appropriately, or
   * Edit app.py to point to your model
3. Run app.py to launch the graphical user interface