Model Metrics

ResNet50:

Model Architecture:

- Backbone: ResNet50 (pre-trained on ImageNet)
- Head Architectures:
  - Bowel Head: Dense(32, activation='sigmoid') -> Dropout(0.4) -> Dense(2, activation='softmax')
  - Extra Head: Dense(32, activation='silu') -> Dropout(0.4) -> Dense(2, activation='softmax')
  - Liver Head: Dense(32, activation='silu') -> Dense(3, activation='softmax')
  - Kidney Head: Dense(32, activation='silu') -> Dense(3, activation='softmax')
  - Spleen Head: Dense(32, activation='silu') -> Dense(3, activation='softmax')

Hyperparameters:

- Batch Size: config.BATCH_SIZE
- Initial Learning Rate: 1e-1
- Learning Rate Schedule:
  - Exponential Decay with decay steps of 10000 and a decay rate of 0.9

Training Configurations:

- Optimizer: Stochastic Gradient Descent (SGD)
- Loss Functions:
  - Bowel: Categorical Crossentropy with label smoothing (0.05)
  - Extra: Categorical Crossentropy with label smoothing (0.05)
  - Liver: Categorical Crossentropy with label smoothing (0.05)
  - Kidney: Categorical Crossentropy with label smoothing (0.05)
  - Spleen: Categorical Crossentropy with label smoothing (0.05)
- Metrics:
  - Bowel: Categorical Accuracy, Recall, Precision
  - Extra: Categorical Accuracy, Recall, Precision
  - Liver: Categorical Accuracy, Recall, Precision
  - Kidney: Categorical Accuracy, Recall, Precision

- Spleen: Categorical Accuracy, Recall, Precision

Training Performance Metrics:

- Validation Loss: [Insert final validation loss]
- Validation Metrics (BEST):
  - Bowel: Accuracy 1.000, Recall 1.000, Precision 1.000
  - Extra: Accuracy 1.000, Recall 1.000, Precision 1.000
  - Liver: Accuracy 1.000, Recall 1.000, Precision 1.000
  - Kidney: Accuracy 1.000, Recall 1.000, Precision 1.000
  - Spleen: Accuracy 0.999, Recall 0.999, Precision 0.999
- BEST Epoch: 22

Additional Notes:

- Model compiled and trained on rsna-preprocessed.
- Training performed for 25.

Xception:

Model Architecture:

- Backbone: Xception (pre-trained on ImageNet)
- Head Architectures:
  - Bowel Head: Dense(16, activation='sigmoid') -> Dropout(0.2) -> Dense(2, activation='softmax')
  - Extra Head: Dense(16, activation='sigmoid') -> Dropout(0.2) -> Dense(2, activation='softmax')
  - Liver Head: Dense(16, activation='silu') -> Dropout(0.2) -> Dense(3, activation='softmax')
  - Kidney Head: Dense(16, activation='silu') -> Dropout(0.2) -> Dense(3, activation='softmax')
  - Spleen Head: Dense(16, activation='silu') -> Dropout(0.2) -> Dense(3, activation='softmax')

Hyperparameters:

- Batch Size: config.BATCH_SIZE
- Initial Learning Rate: 1e-3

- Learning Rate Schedule:
    - Cosine Decay with decay steps and alpha values not provided in the code

Training Configurations:

- Optimizer: RMSprop with learning rate schedule
- Loss Functions:
    - Bowel: Categorical Crossentropy with label smoothing (0.05)
    - Extra: Categorical Crossentropy with label smoothing (0.05)
    - Liver: Categorical Crossentropy with label smoothing (0.05)
    - Kidney: Categorical Crossentropy with label smoothing (0.05)
    - Spleen: Categorical Crossentropy with label smoothing (0.05)
- Metrics:
    - Bowel: Categorical Accuracy, Recall, Precision
    - Extra: Categorical Accuracy, Recall, Precision
    - Liver: Categorical Accuracy, Recall, Precision
    - Kidney: Categorical Accuracy, Recall, Precision
    - Spleen: Categorical Accuracy, Recall, Precision

Training Performance Metrics:

- Training Loss: 1.423 (BEST)
- Validation Loss: [Insert final validation loss]
- Training Metrics (BEST):
    - Bowel: Accuracy 0.936, Recall 0.933, Precision 0.939
    - Extra: Accuracy 0.936, Recall 0.933, Precision 0.939
    - Liver: Accuracy 0.936, Recall 0.933, Precision 0.939
    - Kidney: Accuracy 0.936, Recall 0.933, Precision 0.939
    - Spleen: Accuracy 0.936, Recall 0.933, Precision 0.939
- BEST Epoch: 15

Additional Notes:

- Model compiled and trained on [insert dataset information].
- Training performed for [insert number of epochs].