

Denoising with Machine Learning

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Model Enhancements

- Added an Extra Hidden Layer to training → better capture patterns.
- Fine-tuned for better convergence and stability.
- 5 Epochs → Balances time and model performance

Image 1: Predicted (443.7, 257.7) vs Actual (441.0, 291.0)



Accuracy

$$\text{Accuracy (\%)} = (1 - (\text{Error} / \text{MaxError})) \times 100$$

$$\text{Error} \leq \text{MaxError} = \text{dist}(1024, 1024)$$

Error

$$= \sqrt{(x_{\text{pred}} - x_{\text{true}})^2 + (y_{\text{pred}} - y_{\text{true}})^2}$$

$$\text{Image1 Accuracy} = 0.976929757278$$

Image 2: Predicted (443.7, 257.7) vs Actual (443.0, 296.0)



Accuracy

$$\text{Accuracy (\%)} = (1 - (\text{Error} / \text{MaxError})) \times 100$$

$$\text{Error} \leq \text{MaxError} = \text{dist}(1024, 1024)$$

Error

$$= \sqrt{(x_{\text{pred}} - x_{\text{true}})^2 + (y_{\text{pred}} - y_{\text{true}})^2}$$

$$\text{Image1 Accuracy} = 0.973548132217$$

Image 3: Predicted (443.7, 257.7) vs Actual (437.0, 288.0)



Accuracy

$$\text{Accuracy (\%)} = (1 - (\text{Error} / \text{MaxError})) \times 100$$

$$\text{Error} \leq \text{MaxError} = \text{dist}(1024, 1024)$$

Error

$$= \sqrt{(x_{\text{pred}} - x_{\text{true}})^2 + (y_{\text{pred}} - y_{\text{true}})^2}$$

$$\text{Image1 Accuracy (\%)} = 0.978571405865$$

Image 4: Predicted (443.7, 257.7) vs Actual (444.0, 289.0)



Accuracy

$$\text{Accuracy (\%)} = (1 - (\text{Error} / \text{MaxError})) \times 100$$

$$\text{Error} \leq \text{MaxError} = \text{dist}(1024, 1024)$$

Error

$$= \sqrt{(x_{\text{pred}} - x_{\text{true}})^2 + (y_{\text{pred}} - y_{\text{true}})^2}$$

$$\text{Image1 Accuracy (\%)} = 0.978385294106$$

Image 5: Predicted (443.7, 257.7) vs Actual (443.0, 287.0)



Accuracy

$$\text{Accuracy (\%)} = (1 - (\text{Error} / \text{MaxError})) \times 100$$

$$\text{Error} \leq \text{MaxError} = \text{dist}(1024, 1024)$$

Error

$$= \sqrt{(x_{\text{pred}} - x_{\text{true}})^2 + (y_{\text{pred}} - y_{\text{true}})^2}$$

$$\text{Image1 Accuracy (\%)} = 0.97976158153$$