

# Results: [20, 35] Crossings

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The same CNN and ViT used in the initial study were fine-tuned on a new dataset  $\mathcal{D}$ , where:

$$\mathcal{D} = \mathcal{D}_{\text{train}} \cup \mathcal{D}_{\text{val}} \cup \mathcal{D}_{\text{test}}$$

$$|\mathcal{D}| = 560,000 \text{ diagrams}$$

$$|\mathcal{D}_{\text{train}}| = 448,000 \text{ diagrams}$$

$$|\mathcal{D}_{\text{val}}| = |\mathcal{D}_{\text{test}}| = 56,000 \text{ diagrams.}$$

Each split in  $\mathcal{D}$  included knots with  $n$  crossings where  $n \in \{20, 21, \dots, 35\}$ . For all values of  $n$ , each split contained an equal number of  $n$ -crossing unknot and non-trivial knot diagrams.

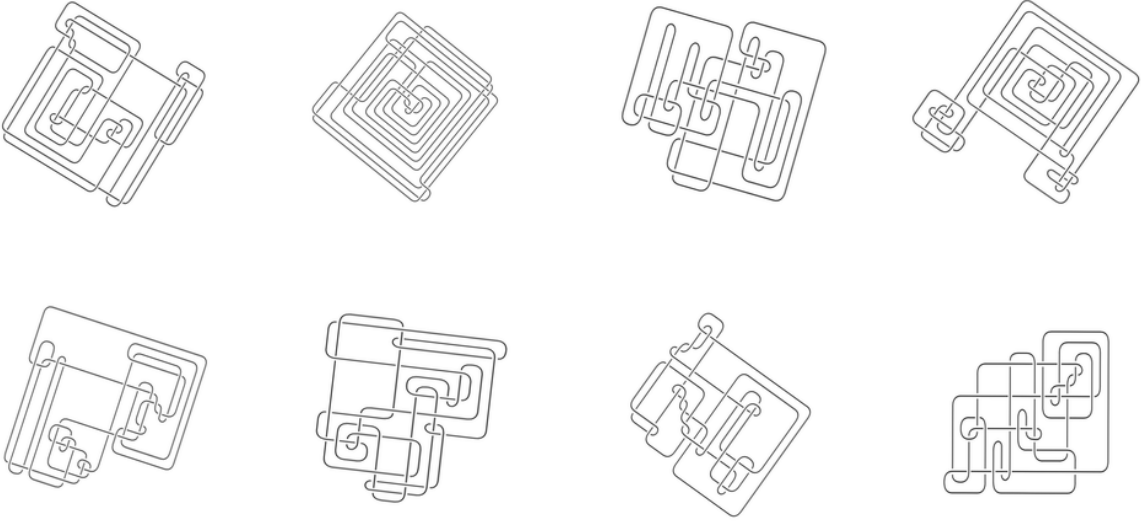


Figure 1: 35 crossing unknots (top row) and non-trivial knots (bottom row) in  $\mathcal{D}_{\text{test}}$ .

## **CNN Results**

**CNN TP: True Unknots Predicted as Unknots**

**CNN FN: True Unknots Predicted as Knots**

**CNN TN: True Knots Predicted as Knots**

**CNN FP: True Knots Predicted as Unknots**

## **ViT Results**

**ViT TP: True Unknots Predicted as Unknots**

**ViT FN: True Unknots Predicted as Knots**

**ViT TN: True Knots Predicted as Knots**

**ViT FP: True Knots Predicted as Unknots**