

Weekly Study Report

Wang Ma

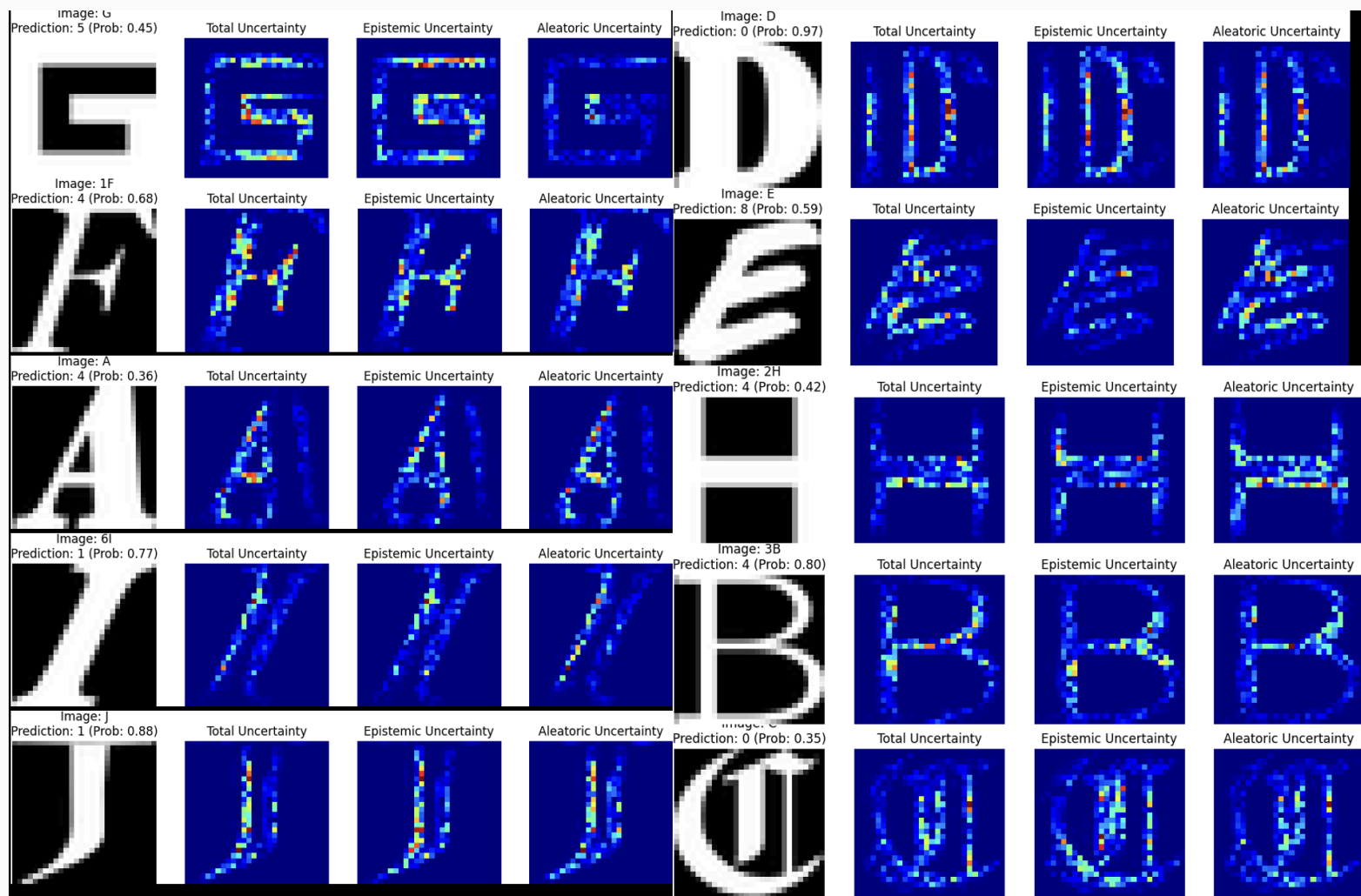
2024-09-27

Electrical, Computer, and Systems Engineering Department
Rensselaer Polytechnic Institute

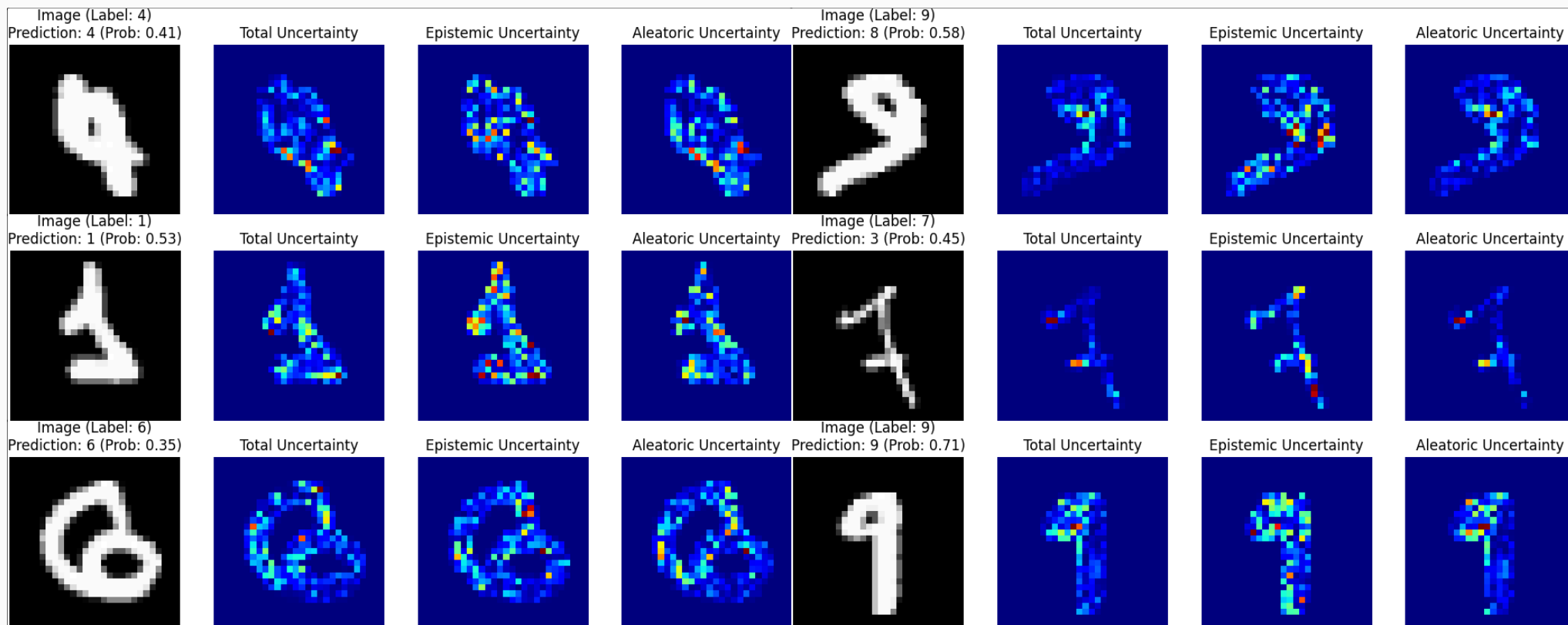
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1. Hands-on: Uncertainty Attribution with Vanilla Gradients

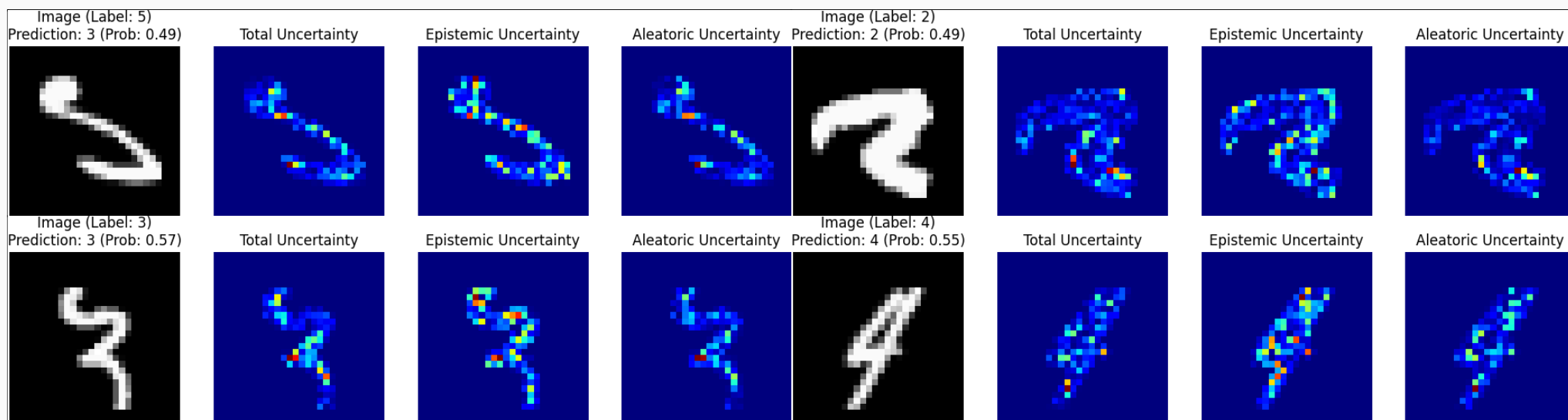
1.1 Results on OOD Data



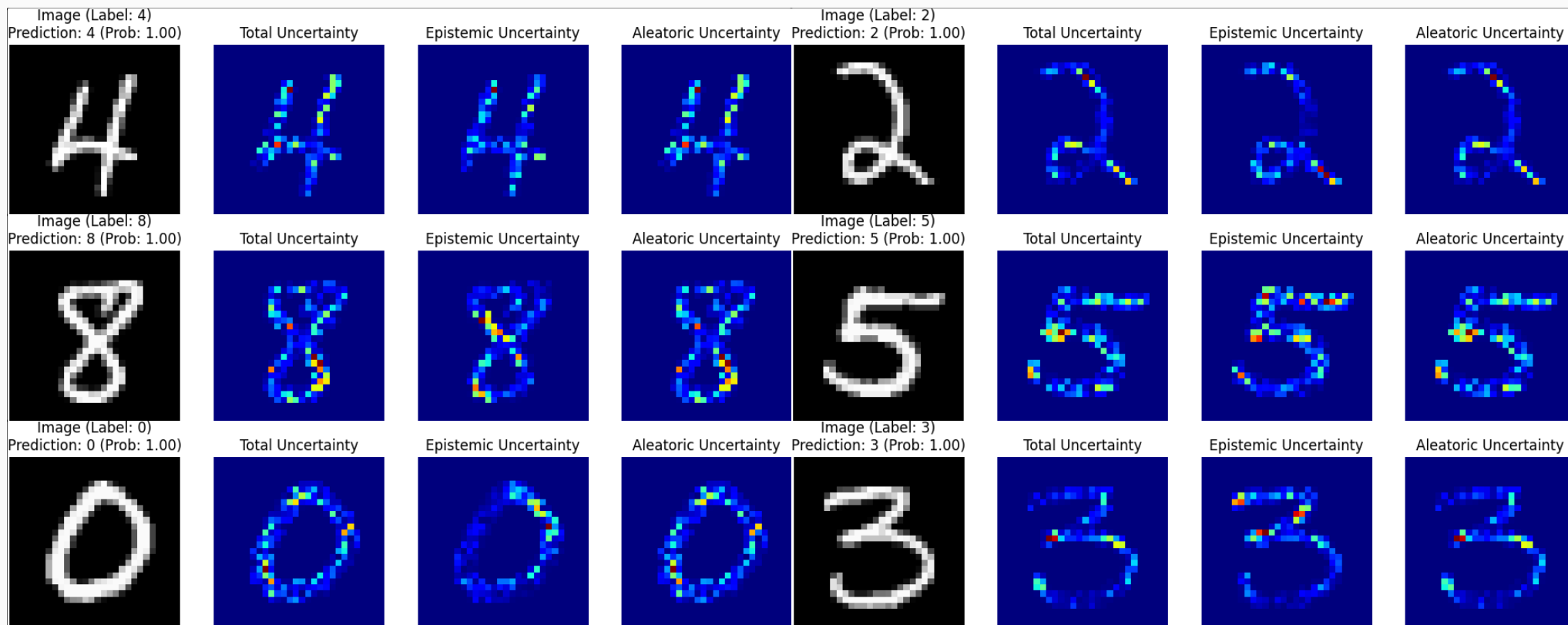
1.2 Select and Visualize the Most Uncertain Images



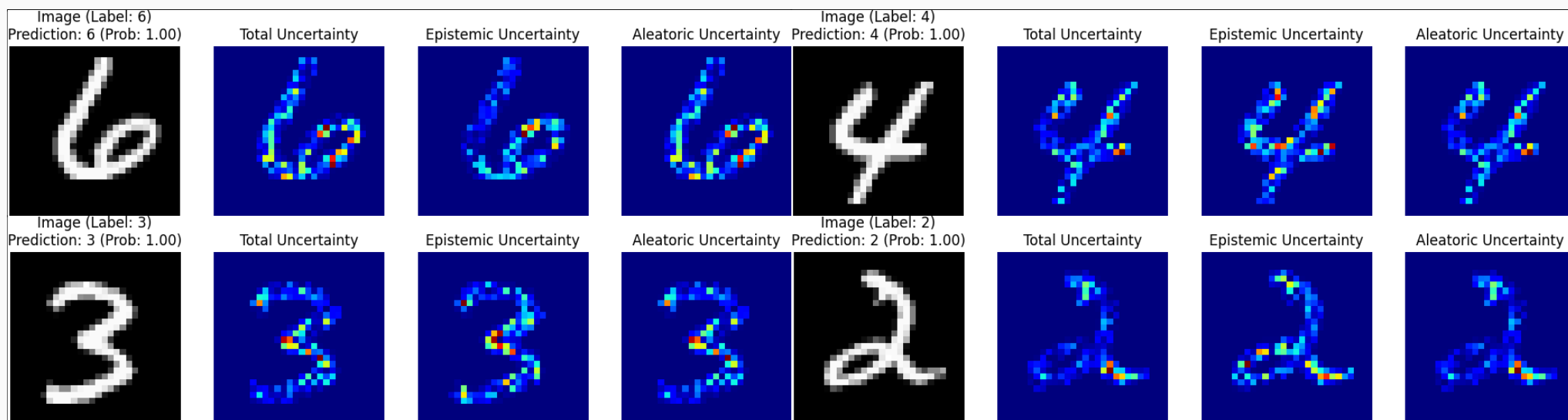
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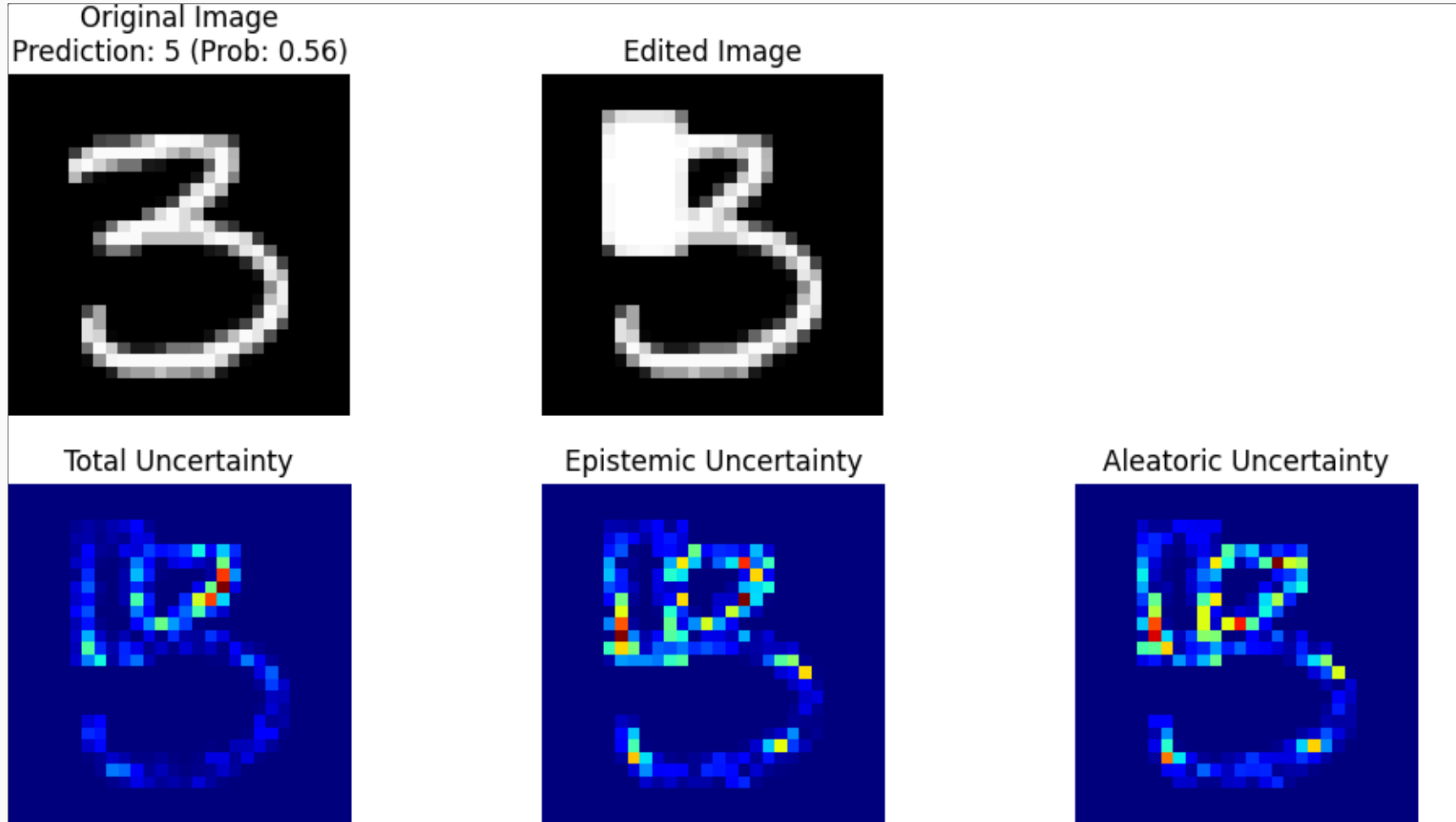
1.3 Select and Visualize the Least Uncertain Images



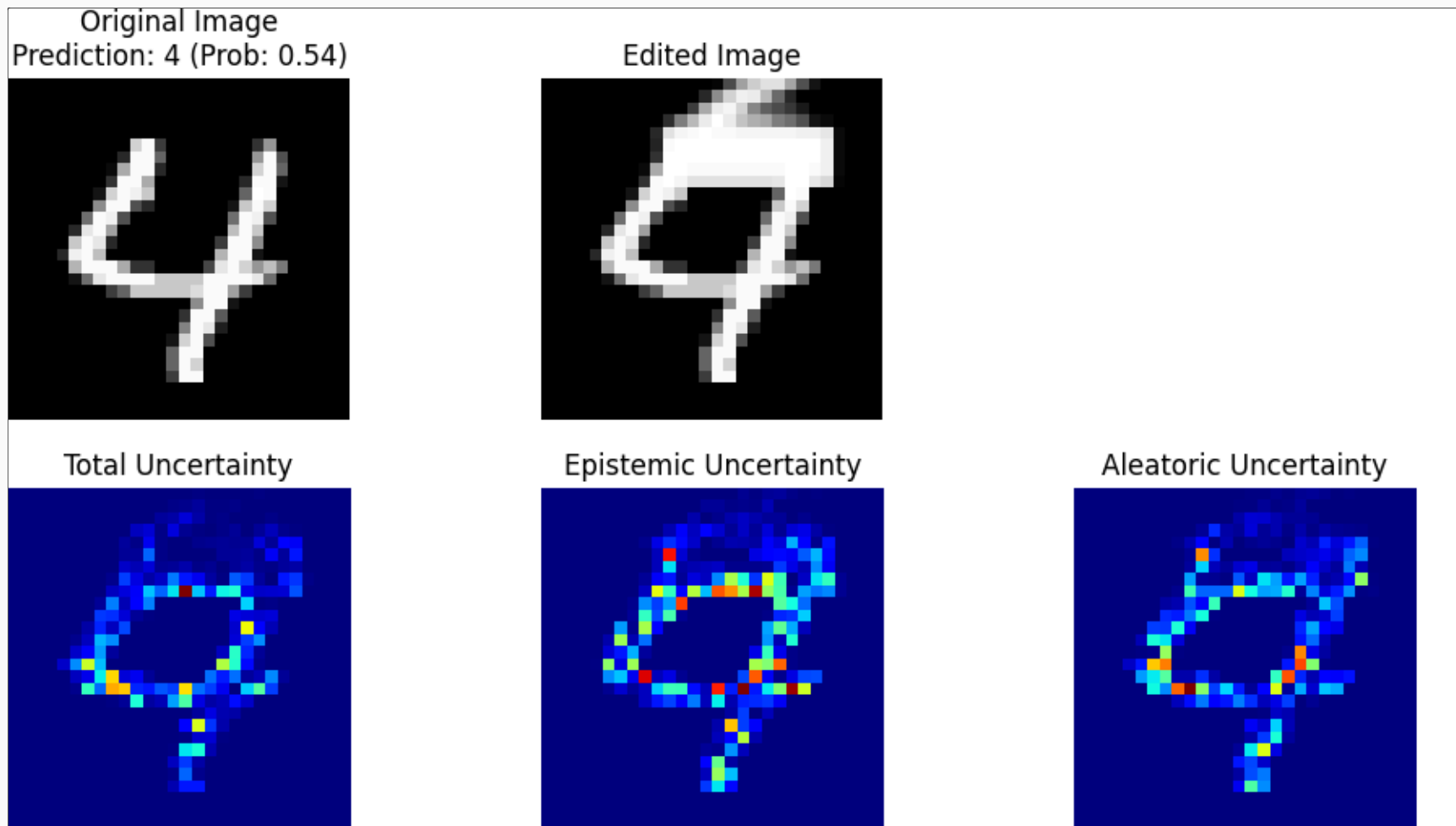
1.3 Select and Visualize the Least Uncertain Images



1.4 If We Edited the Images with Least Uncertainty

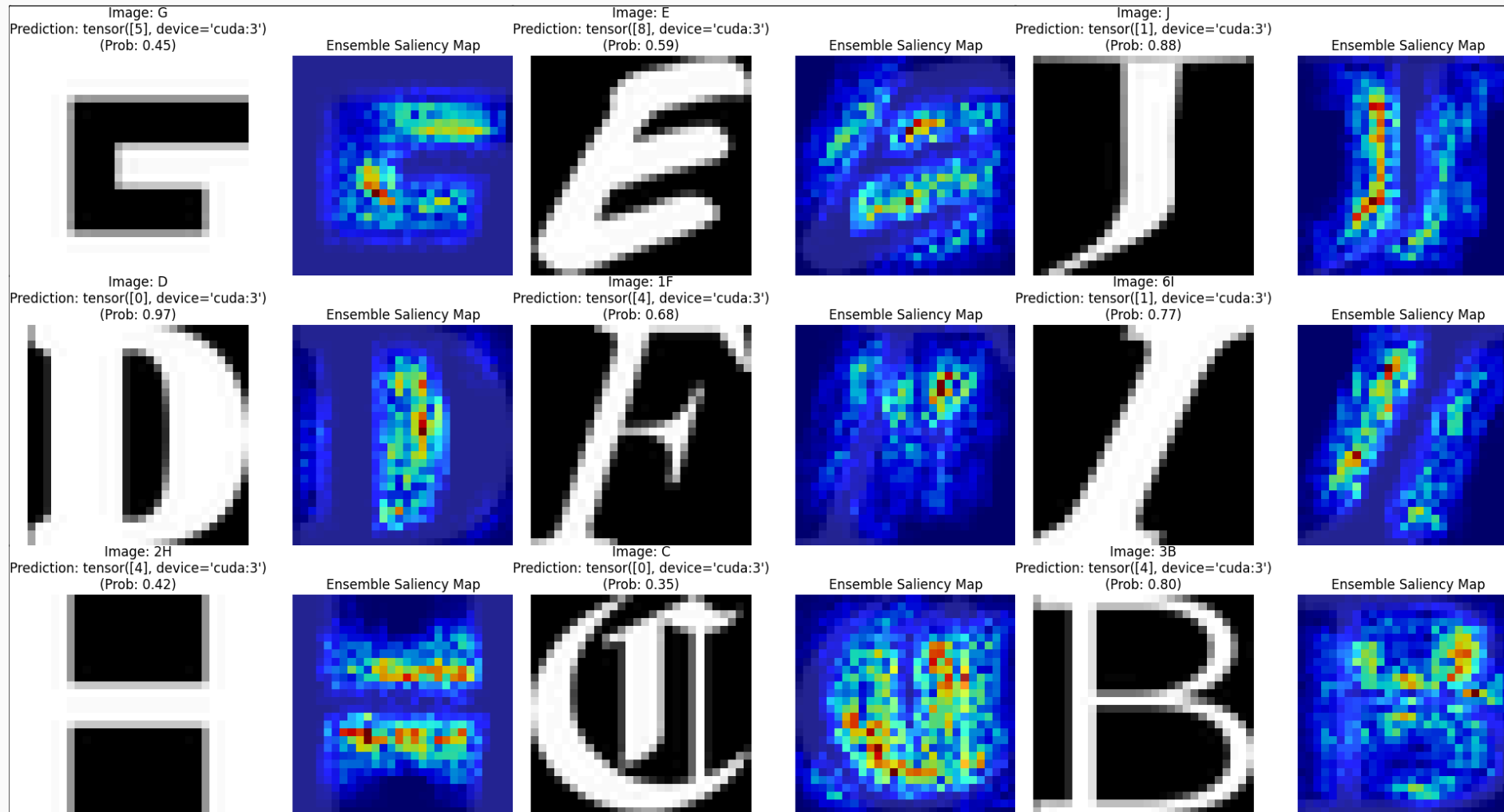


1.4 If We Edited the Images with Least Uncertainty



2. How Does the Model Work: Saliency Map Plot

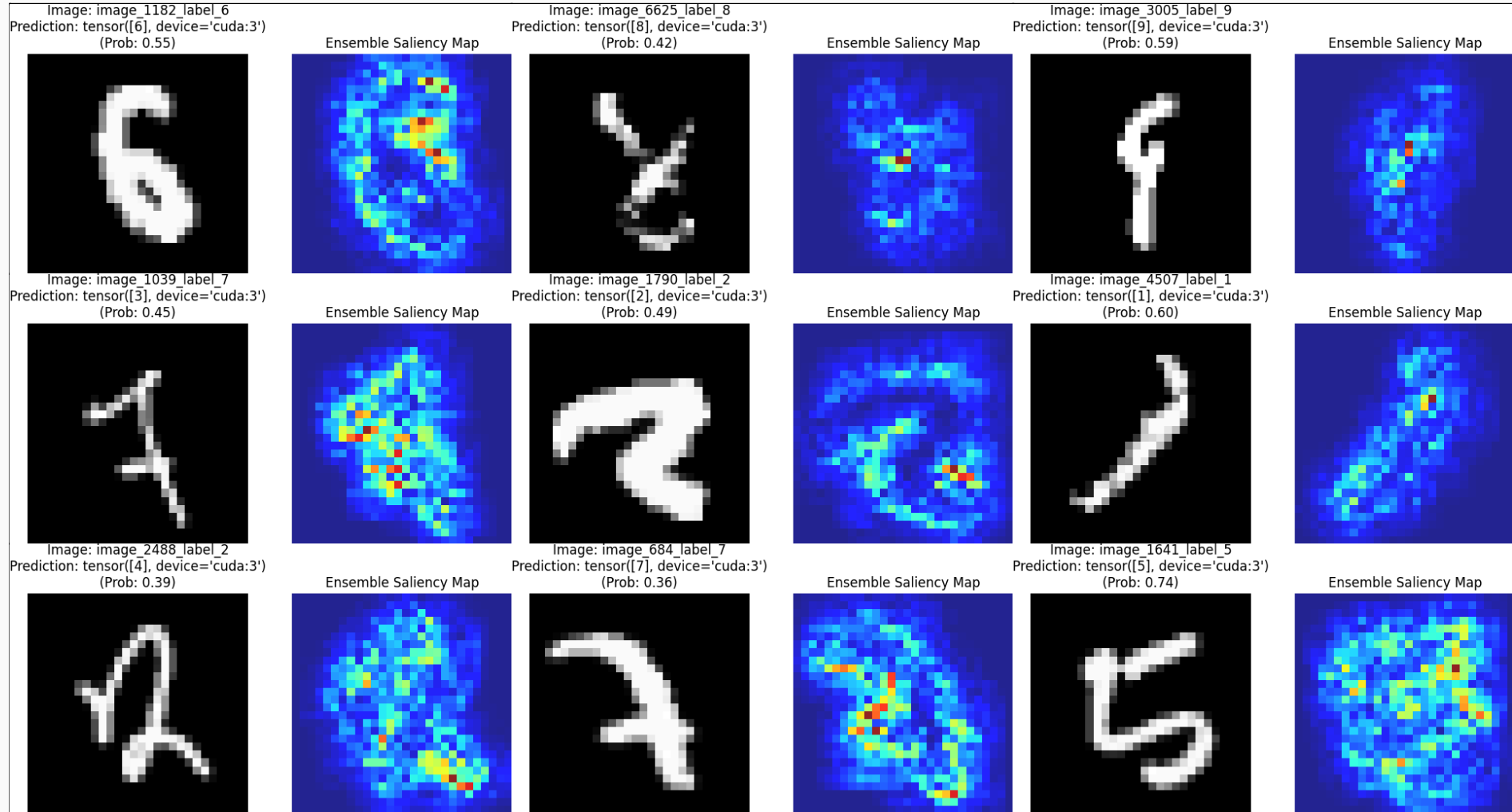
2.1 Saliency Map of OOD Data



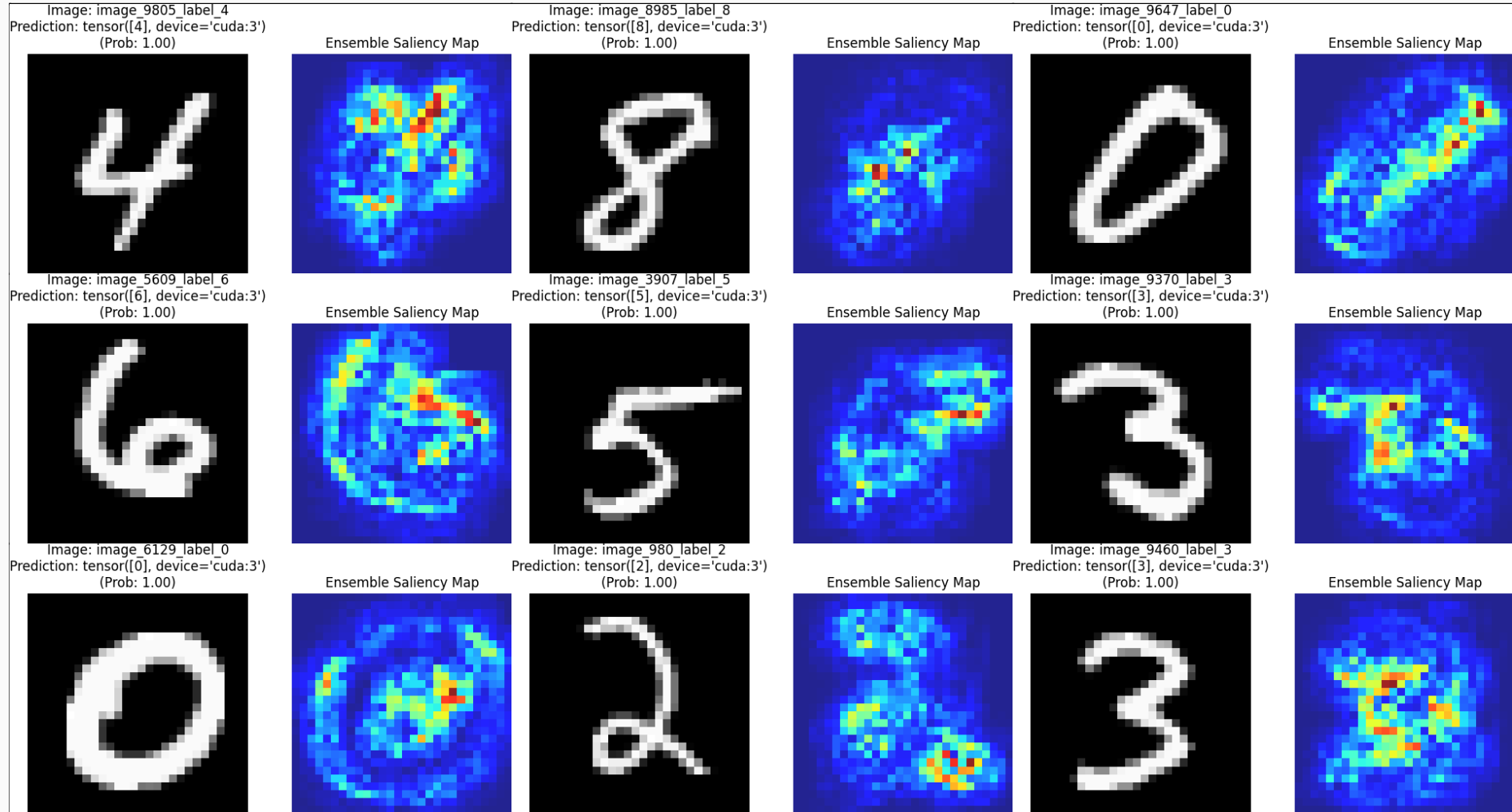
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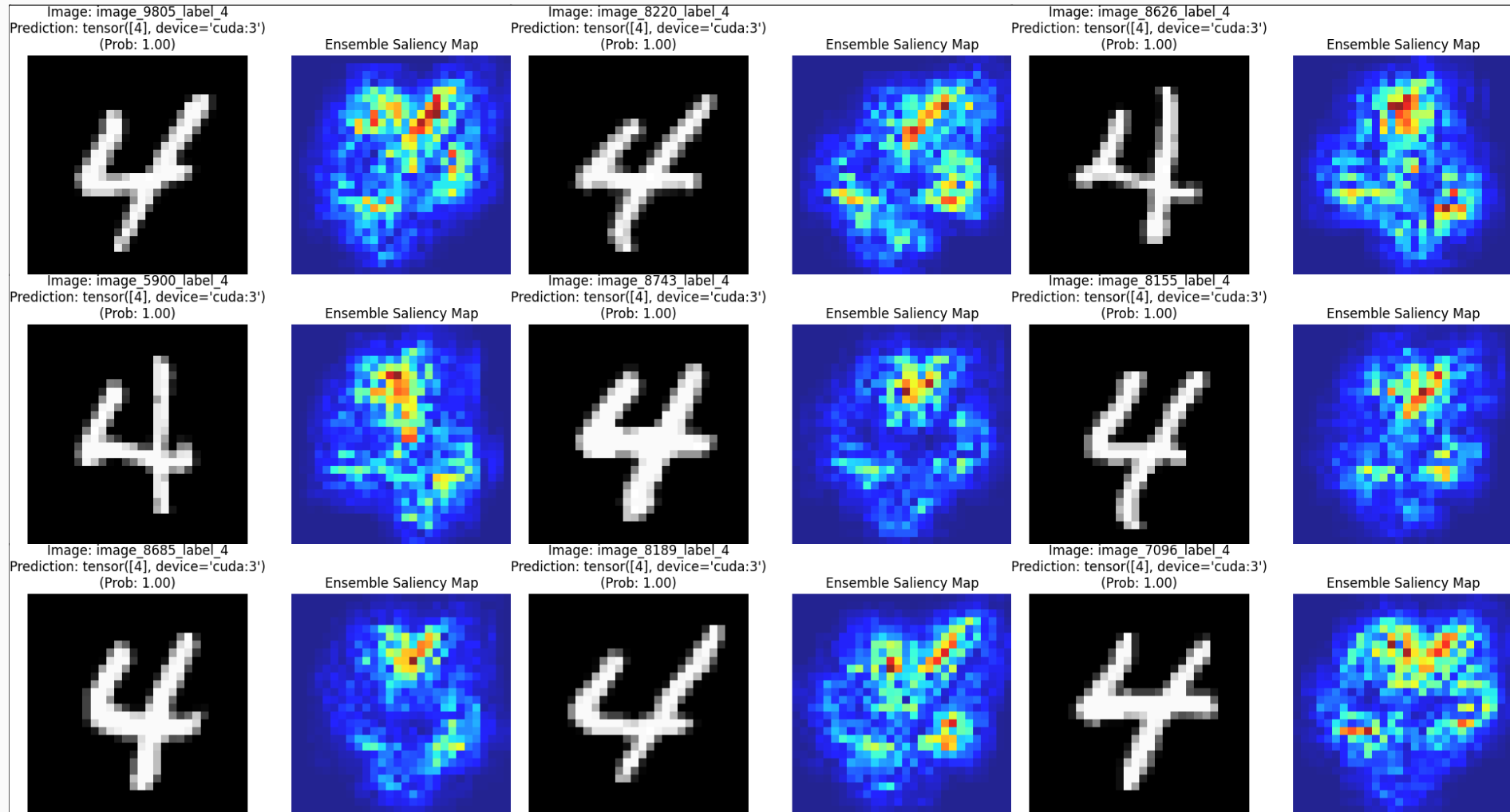
2.2 Saliency Map on the Most Uncertain Images



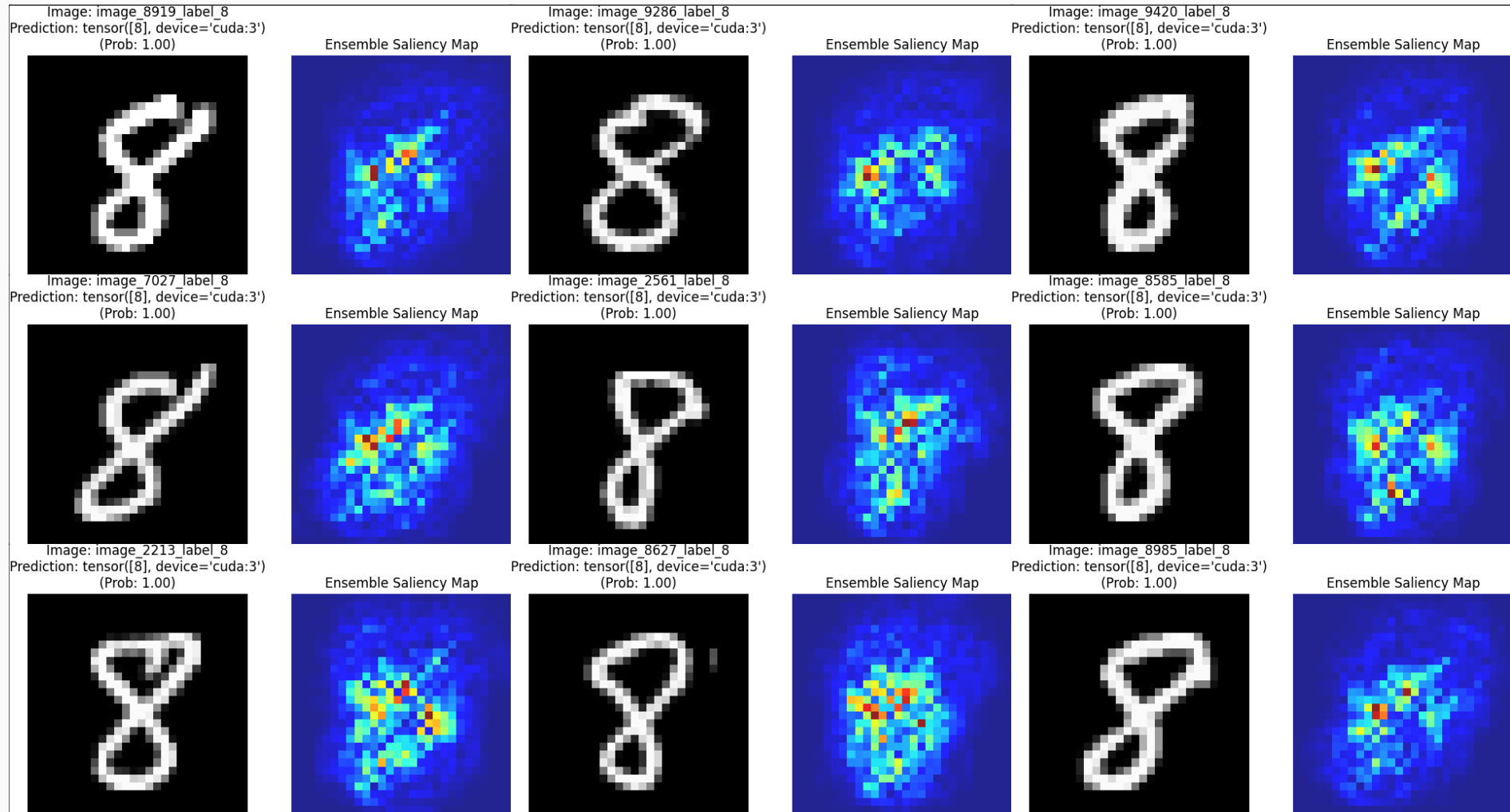
2.3 Saliency Map on the Least Uncertain Images



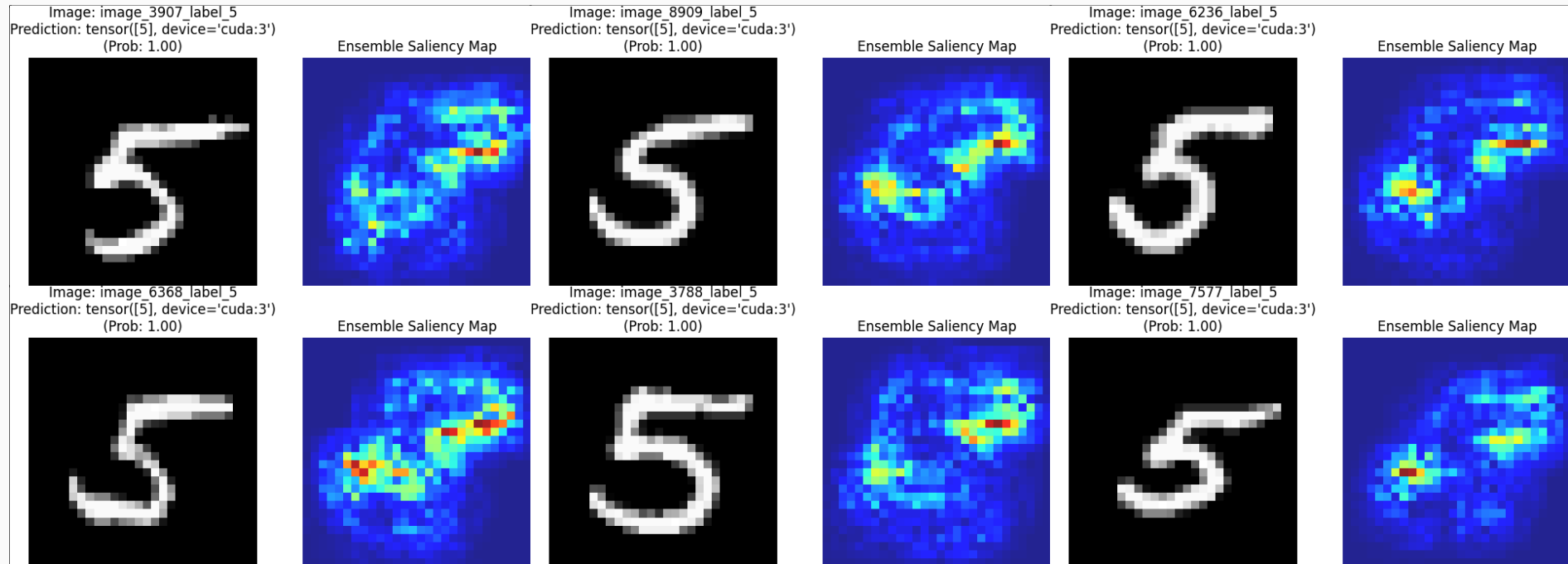
2.4 Saliency Map on the Least Uncertain Images “4”



2.5 Saliency Map on the Least Uncertain Images “8”

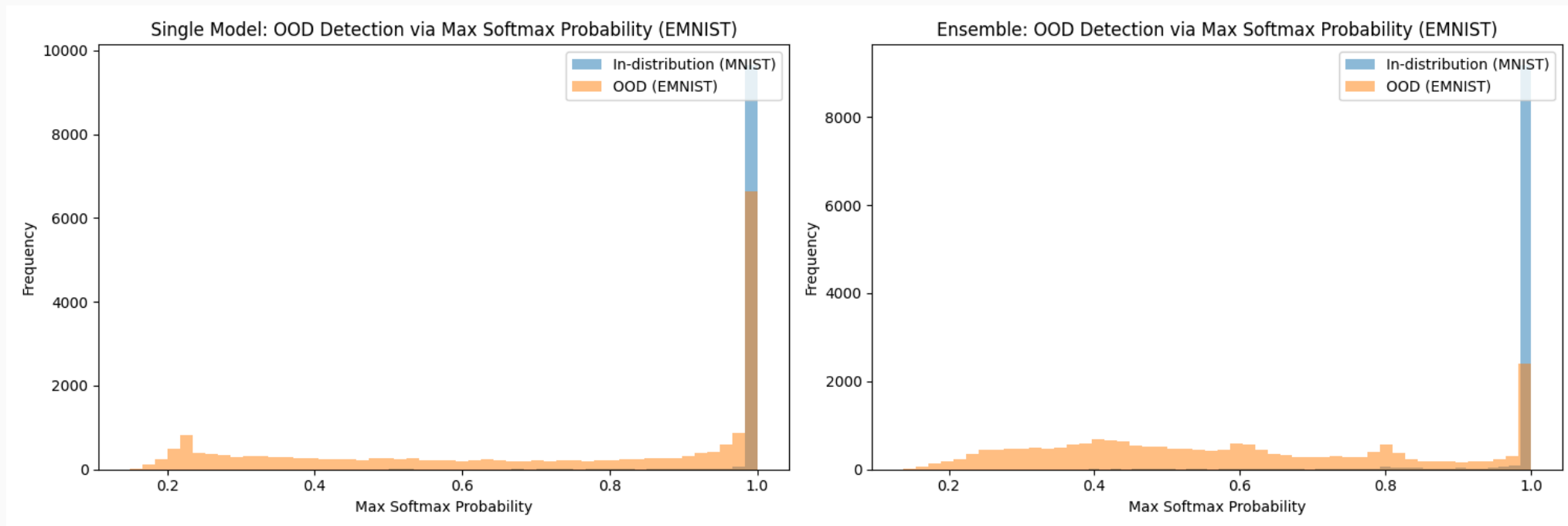


2.6 Saliency Map on the Least Uncertain Images “5”

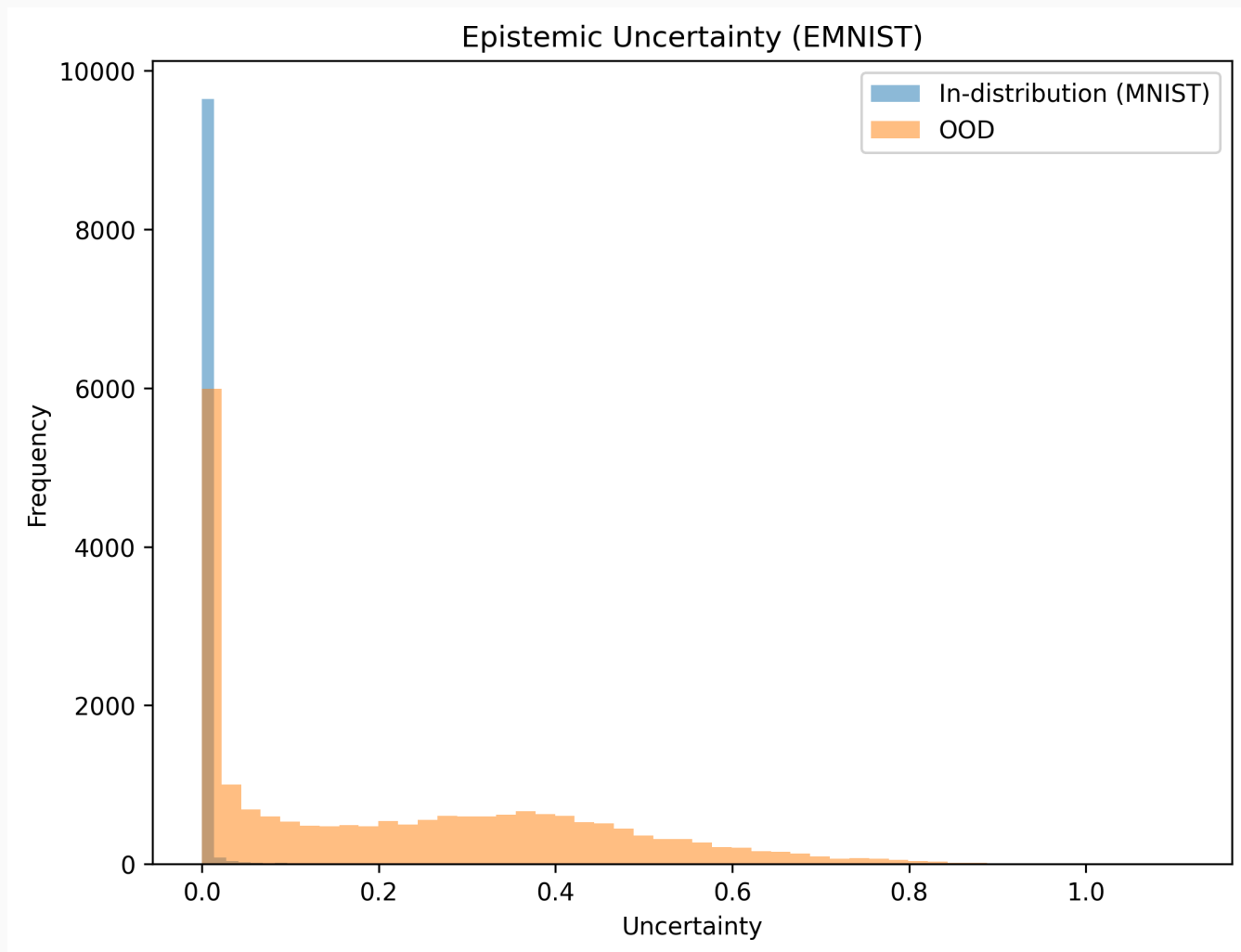


3. A Make-up for Last Week

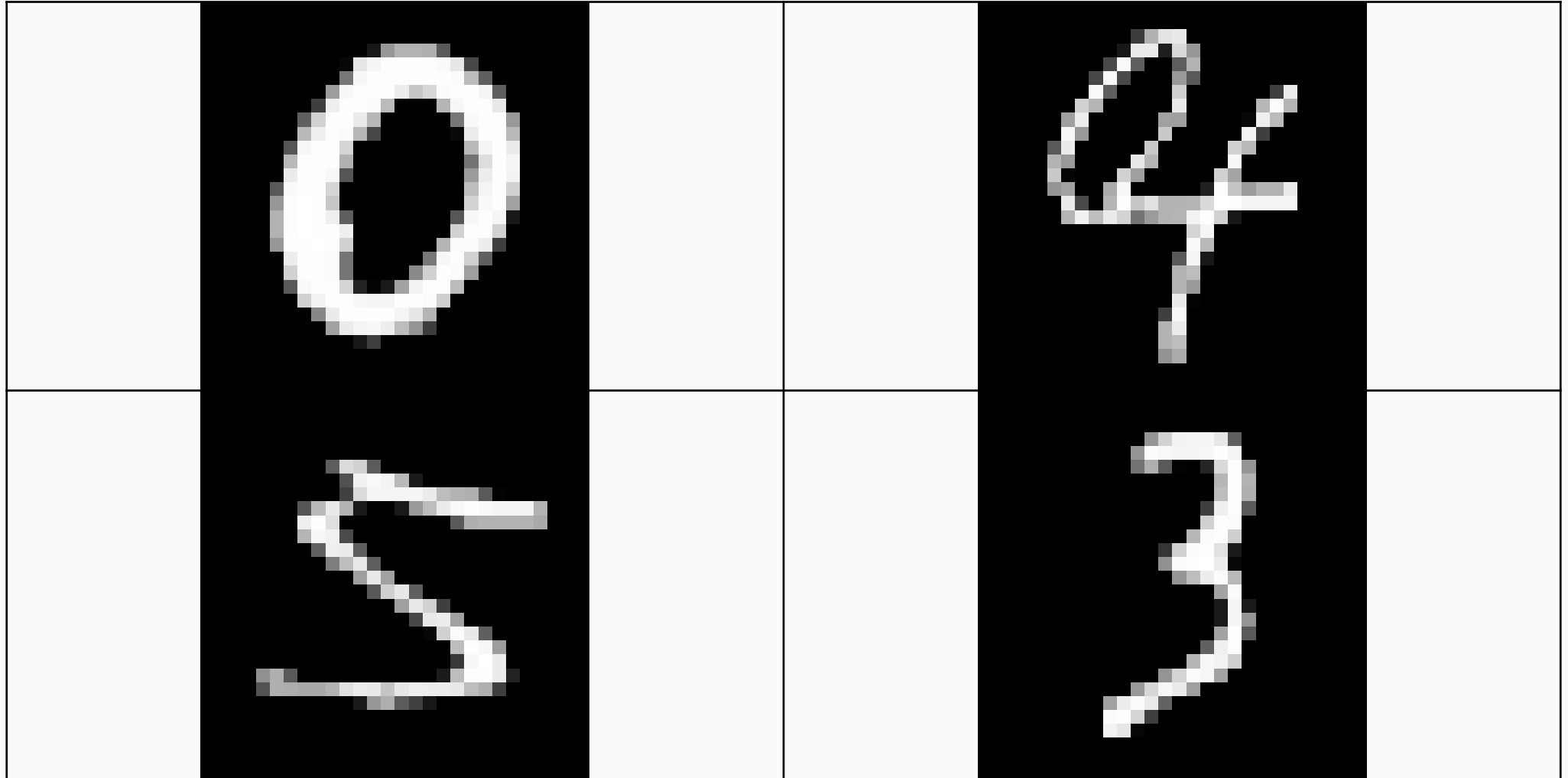
3.1 High Max Probability & Low Uncertainty on EMNIST



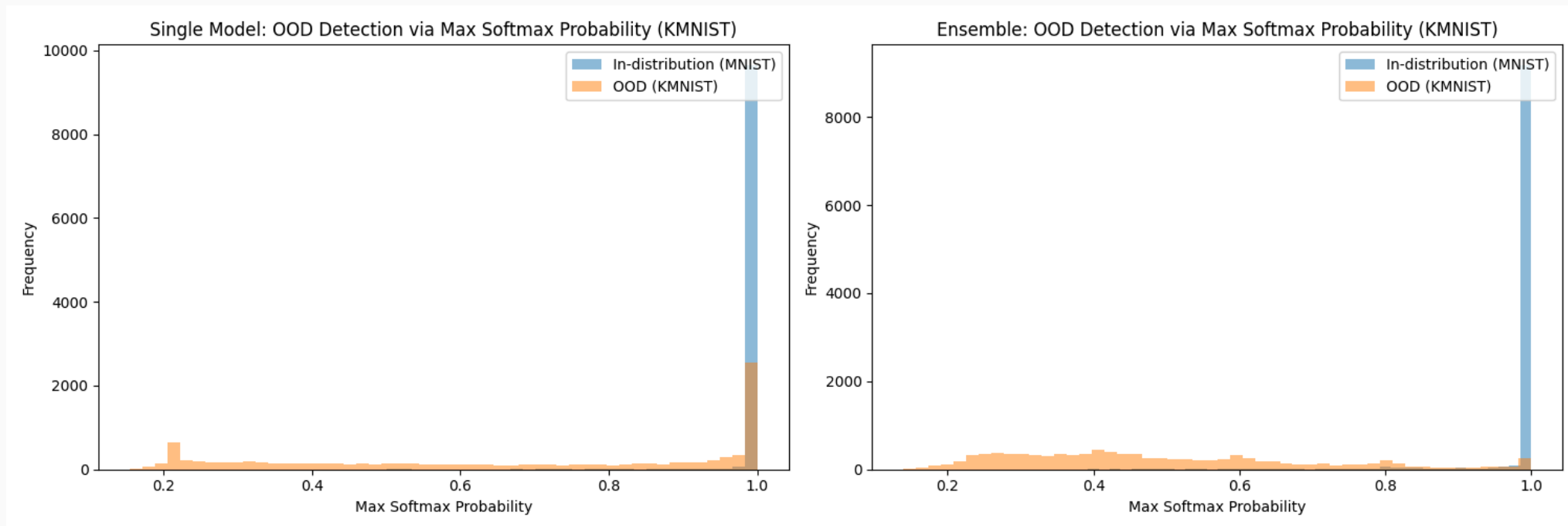
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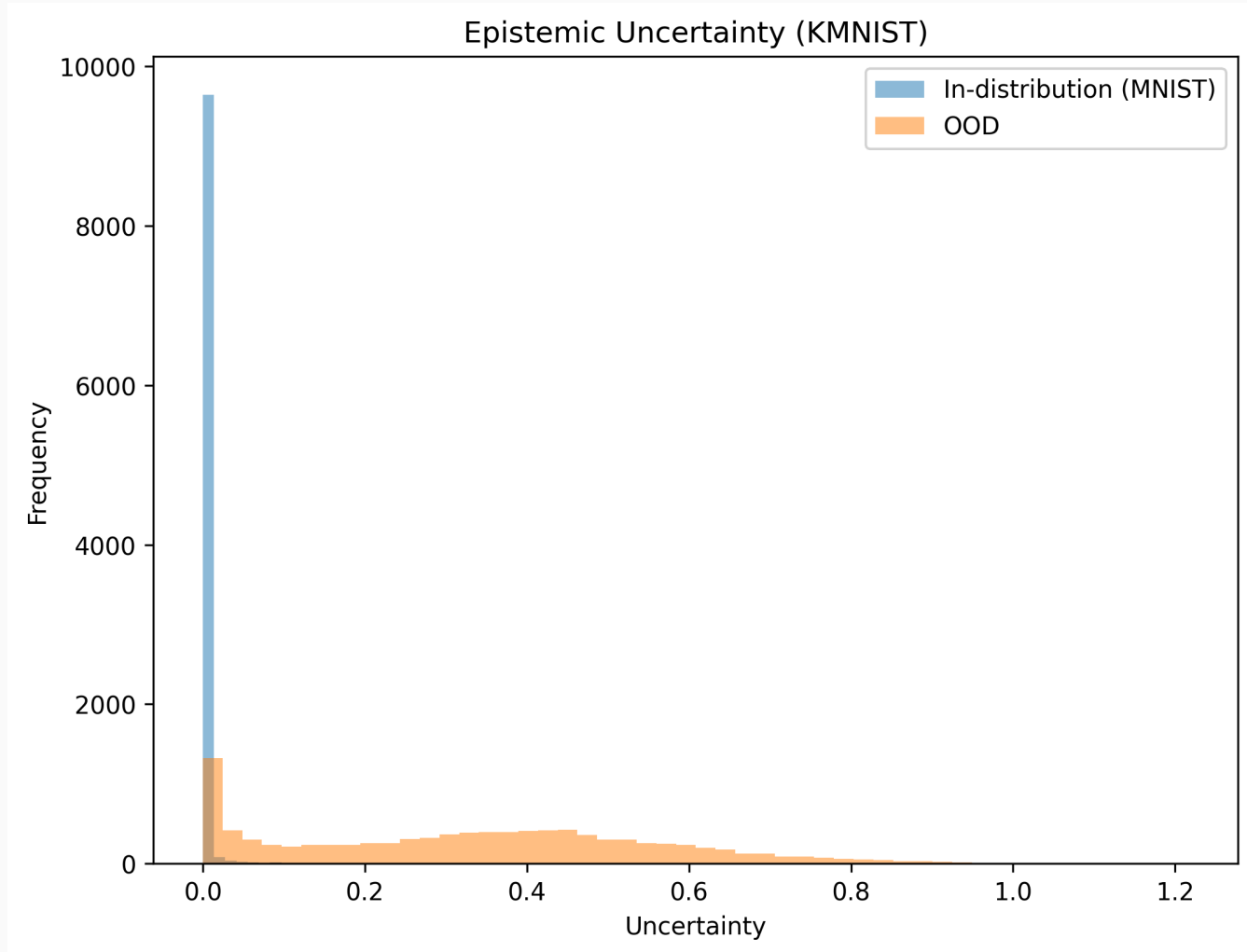
3.1 High Max Probability & Low Uncertainty on EMNIST



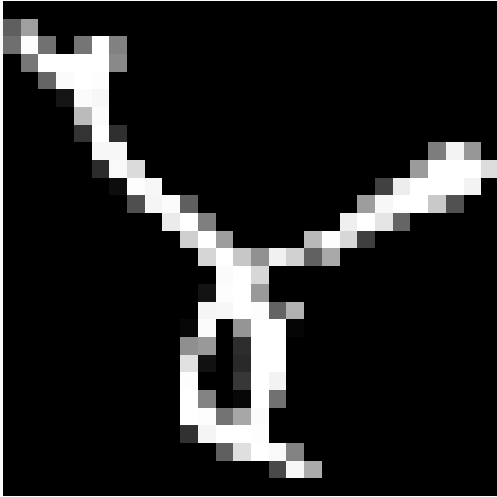
3.2 High Max Probability & Low Uncertainty on KMNIST



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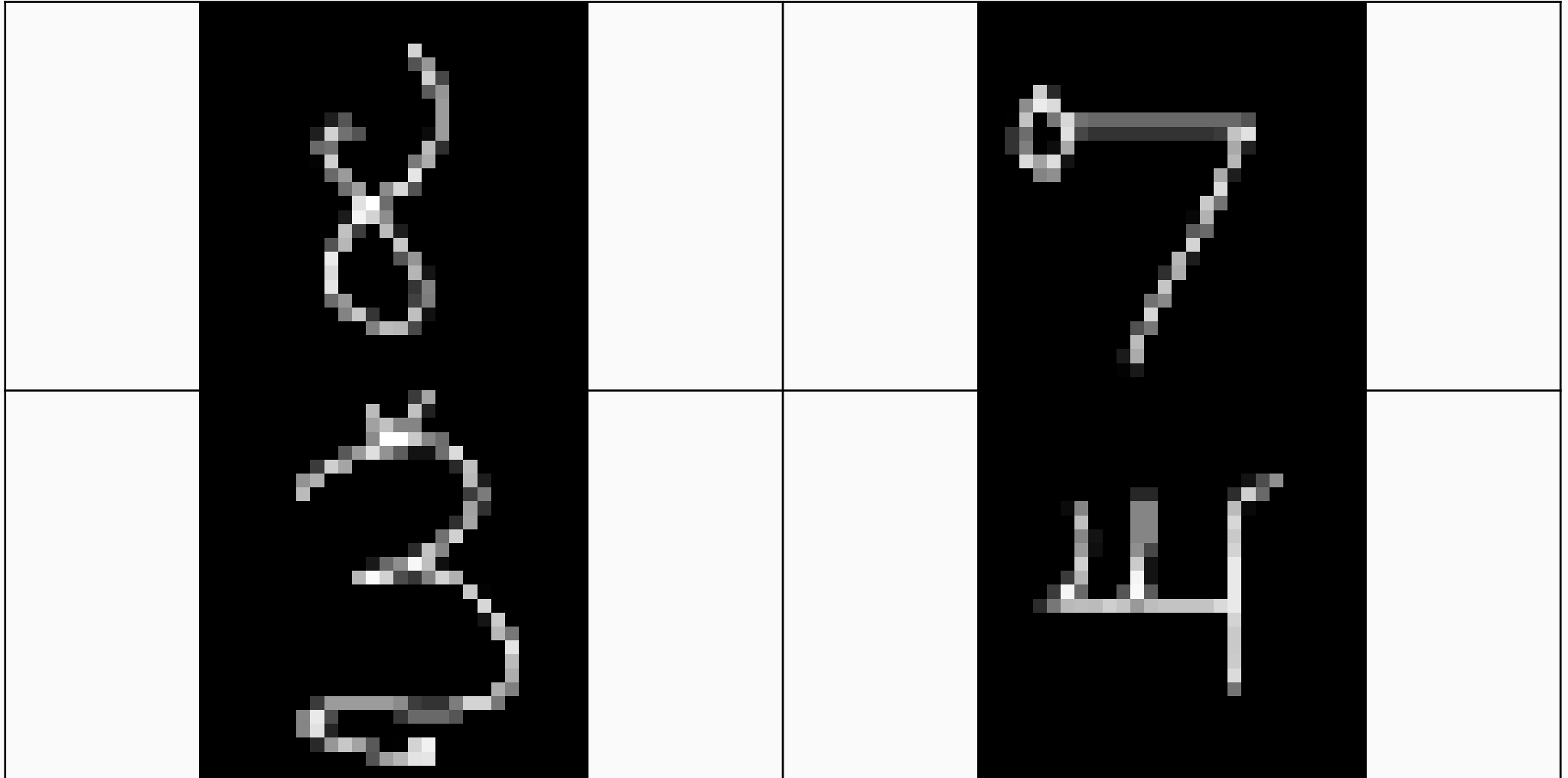


KMNIST: Japanese Kazushiji Writing Characters

prediction: 8

max-prob:100%

3.3 High Max Probability & Low Uncertainty on Omniglot



4. Plan for Next Week

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1. Extending Search/Reading on Uncertainty-related Generative Models (Diffusion Models)
2. Read the paper DAG-GFlowNet (and try to implement it!)
3. Extending Reading on Other Topics about Uncertainty (Like, Conformal Prediction, Evidential Learning, Active Learning)