

Tutorial 5 - Performance Metrics

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Monday 18th October, 2021

Disclaimer: Recorded Tutorials will be Recorded

Privacy Preservation:

- Ask questions in the chat¹
- Keep video off

Note: If the above *hinders your ability to learn \wedge violates your privacy*, please let me/Dr. Green know ASAP and video will be post-processed accordingly.

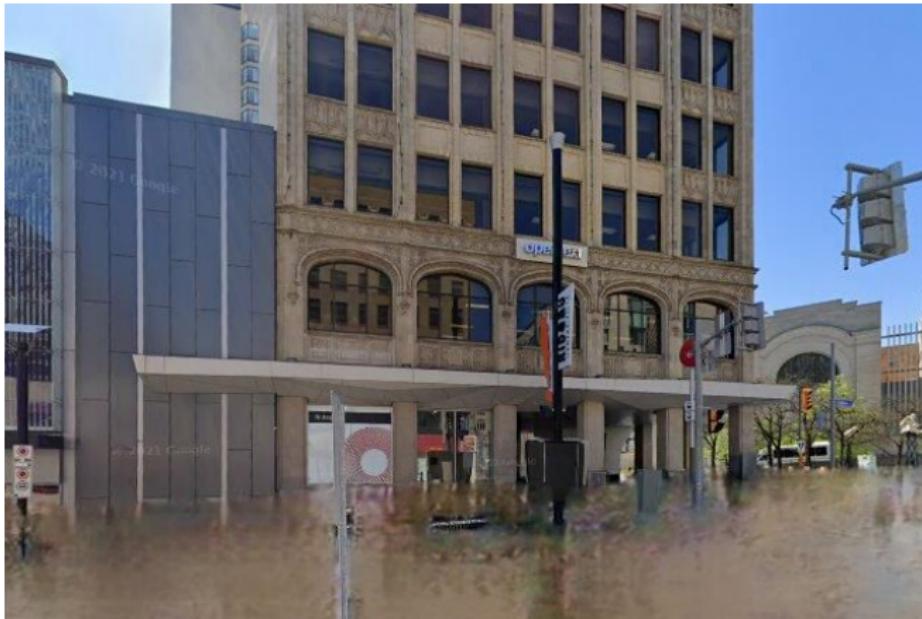
¹I encourage unmuted/voice-based questions at any time, but know that this isn't explicitly privacy-preserving

ML Weekly

Recent news events from the ML community

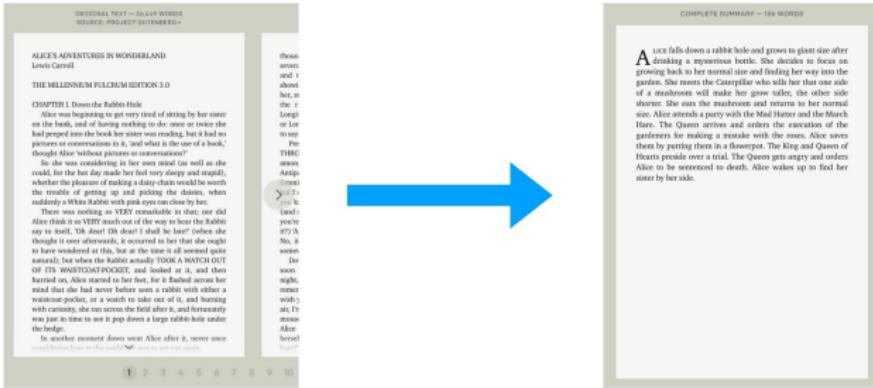
ML Weekly

1. **(Vision)** Montreal-made website uses AI to depict impacts of climate change anywhere in the world



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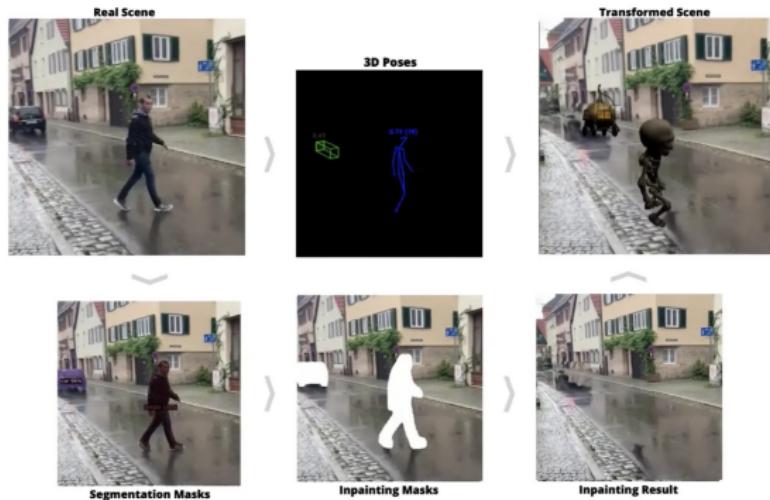
ML Weekly

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3. **(AI)** Facebook is researching AI systems that see, hear, and remember everything you do



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2. **(NLP)** OpenAI's latest model can summarise those tl;dr books
3. **(AI)** Facebook is researching AI systems that see, hear, and remember everything you do
4. **(Vision)** Why look at reality when you can edit what you see in real time?



Tutorial Intuition

Building an Intuition for the Concepts of this Tutorial

How Good is my Model?

Welcome to the *metric zoo*!

There exists several dozens of model evaluation metrics and it is critical that one pairs the **right metric** for the **right problem**.

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- **Classification-Type:** accuracy, precision, recall, specificity, F1-score, ROC, AUC, ...
- **Regression-Type:** MSE, MAE, RMSE, ...

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- **Classification-Type:** accuracy, precision, recall, specificity, F1-score, ROC, AUC, ...
- **Regression-Type:** MSE, MAE, RMSE, ...
- Rank-Aware Metrics
- Statistical-Type Metrics
- Computer Vision Metrics
- NLP Metrics
- Deep Learning-Related Metrics

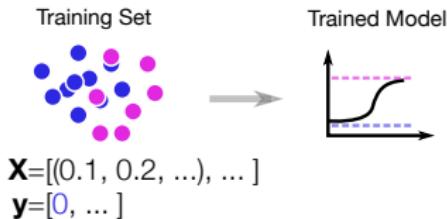
How Good is my Model?

Training Set

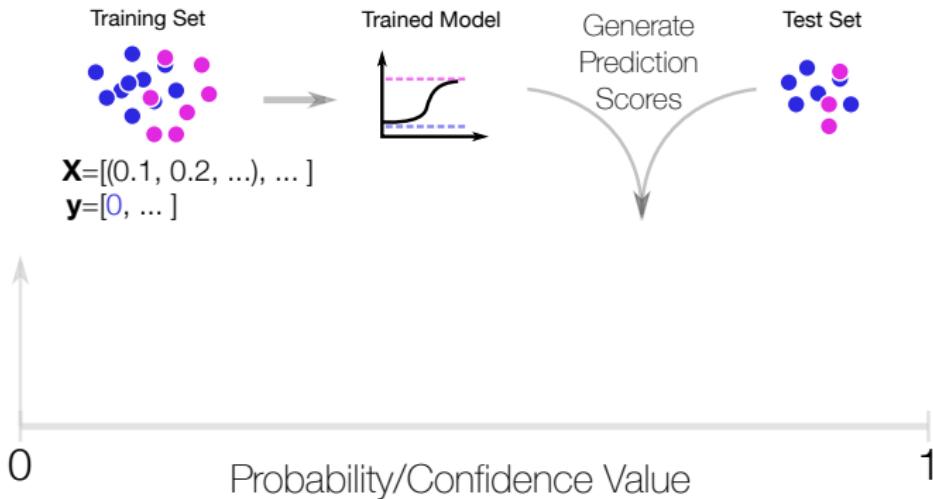


$\mathbf{X} = [(0.1, 0.2, \dots), \dots]$
 $\mathbf{y} = [0, \dots]$

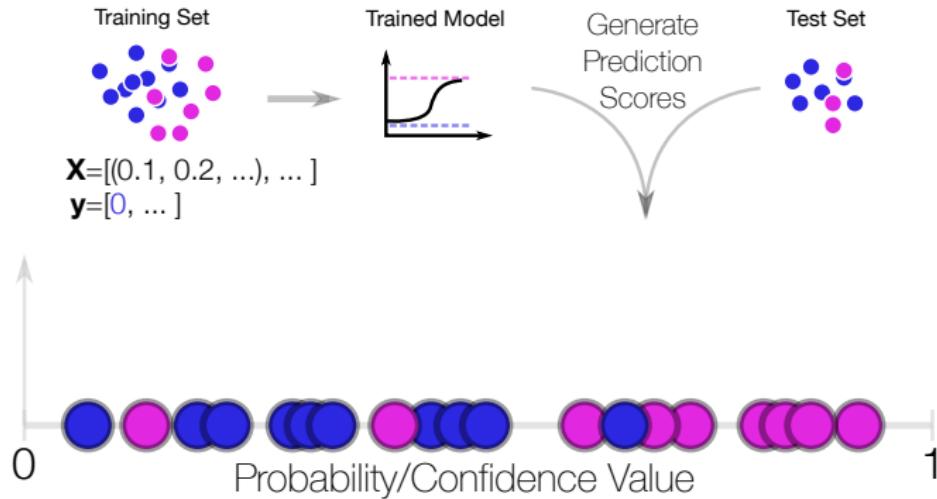
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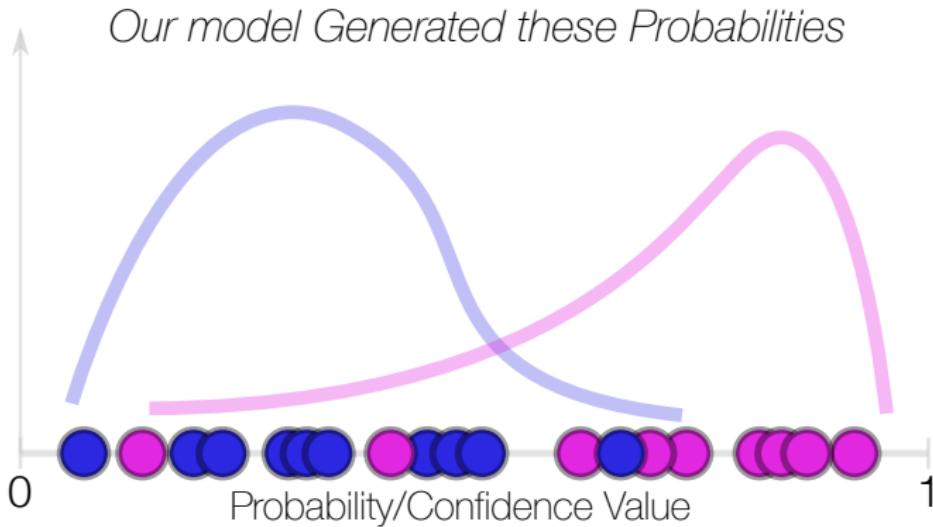
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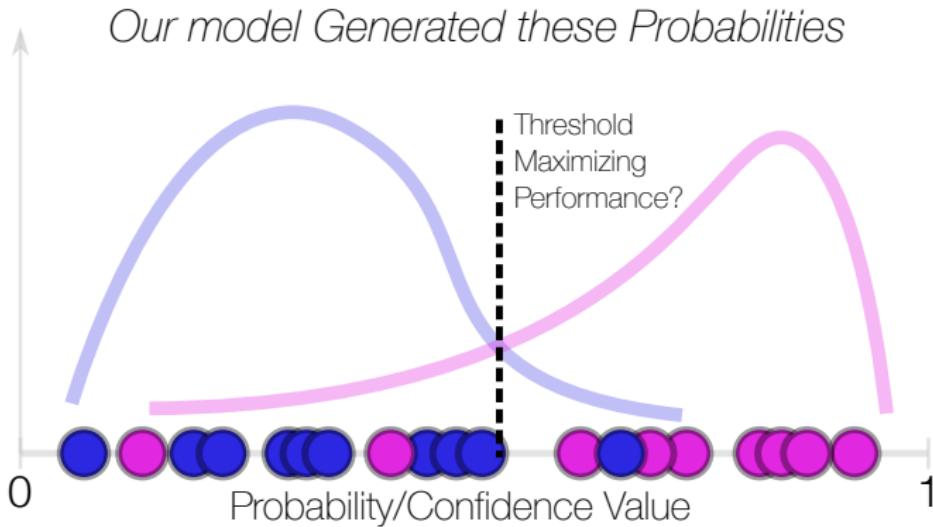
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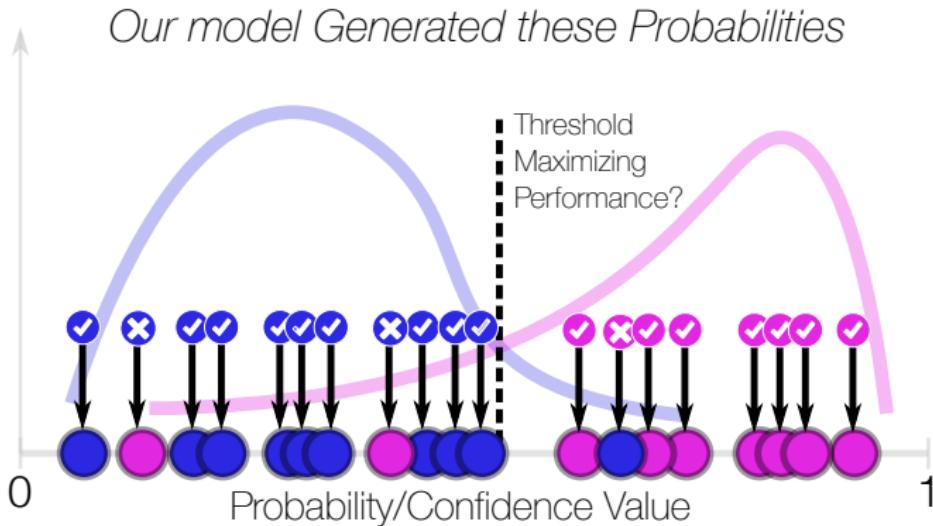
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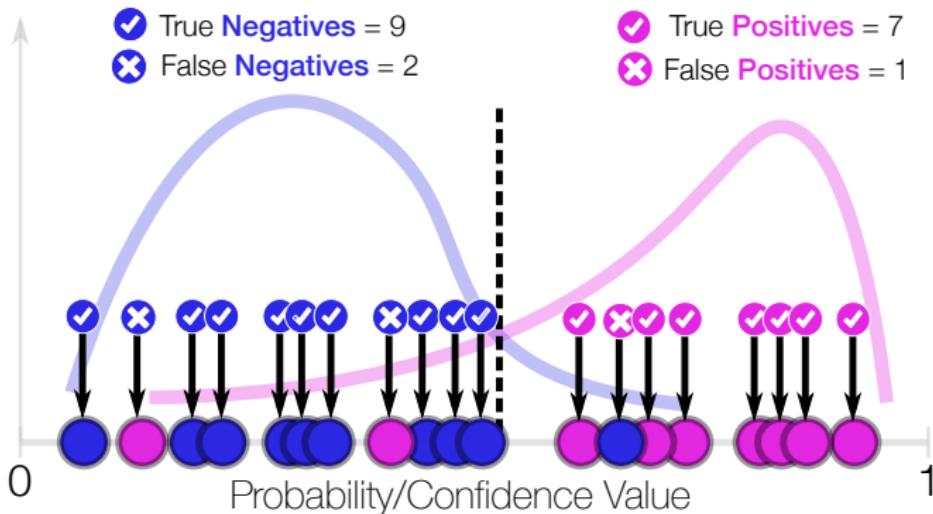
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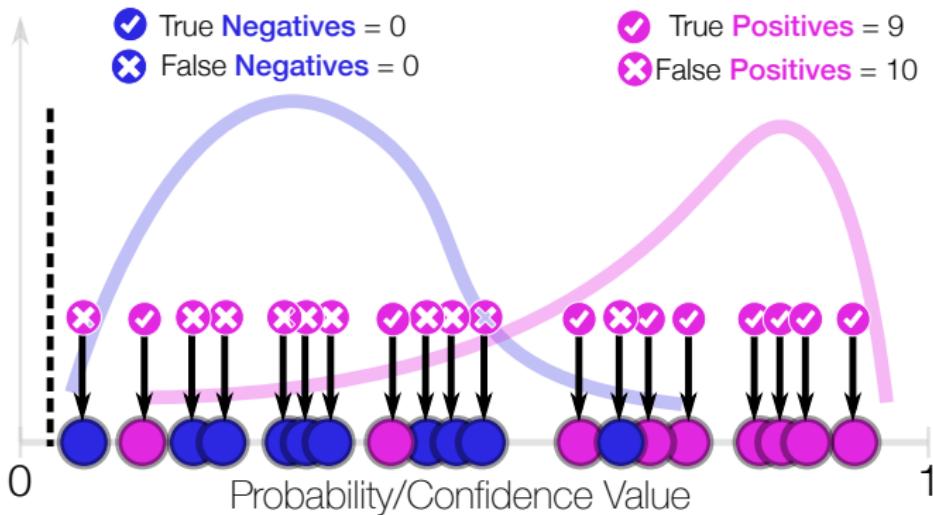
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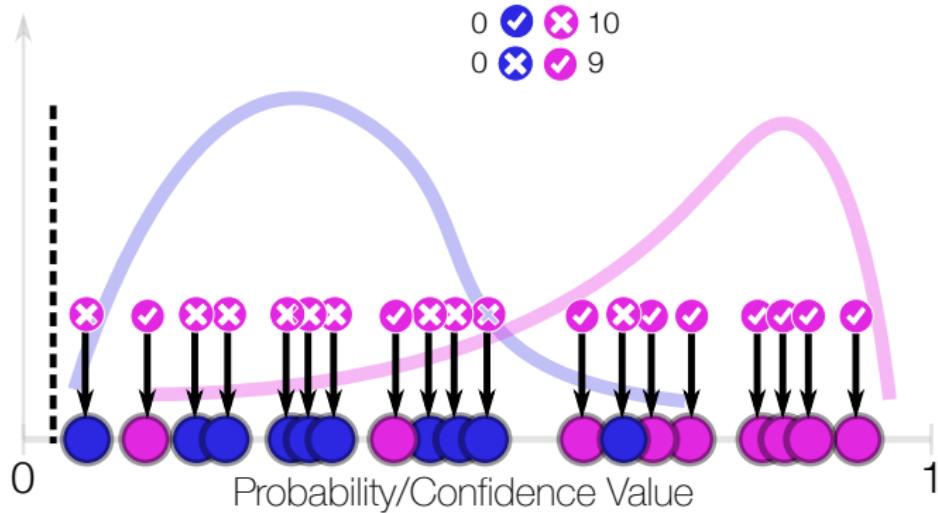
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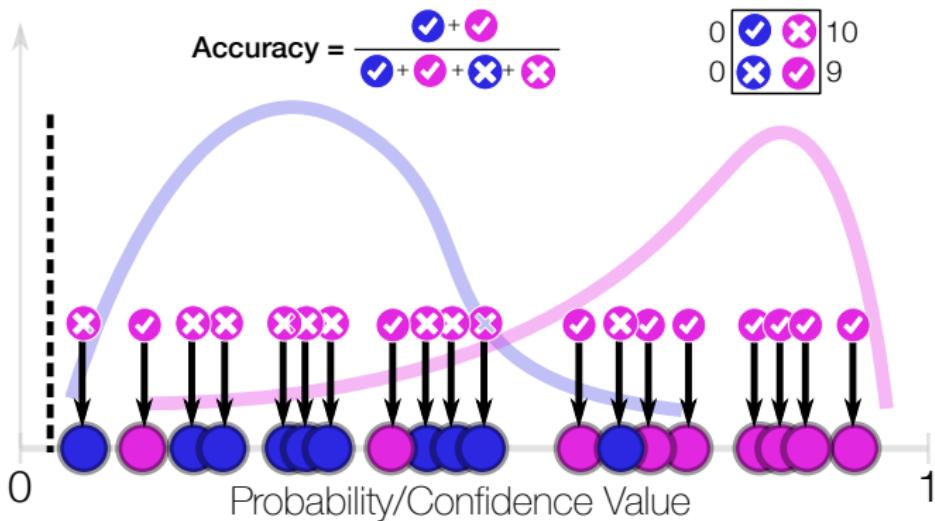
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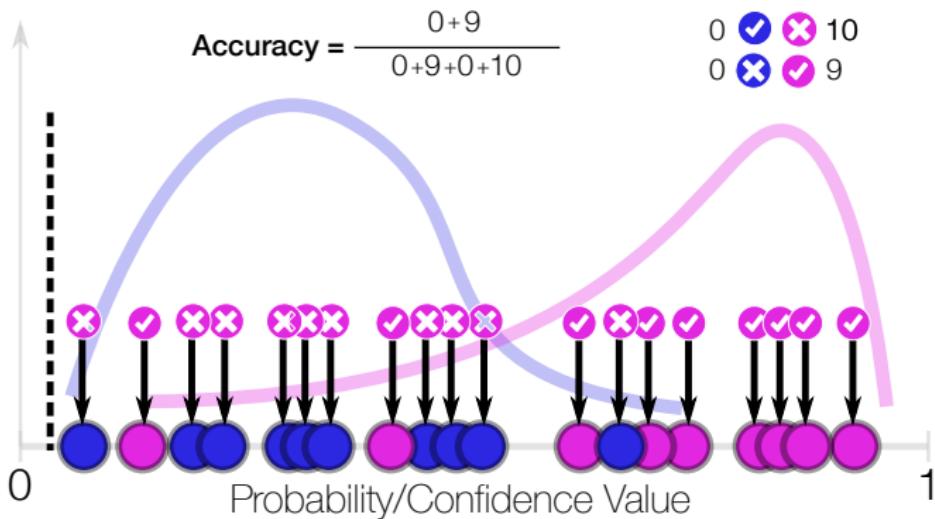
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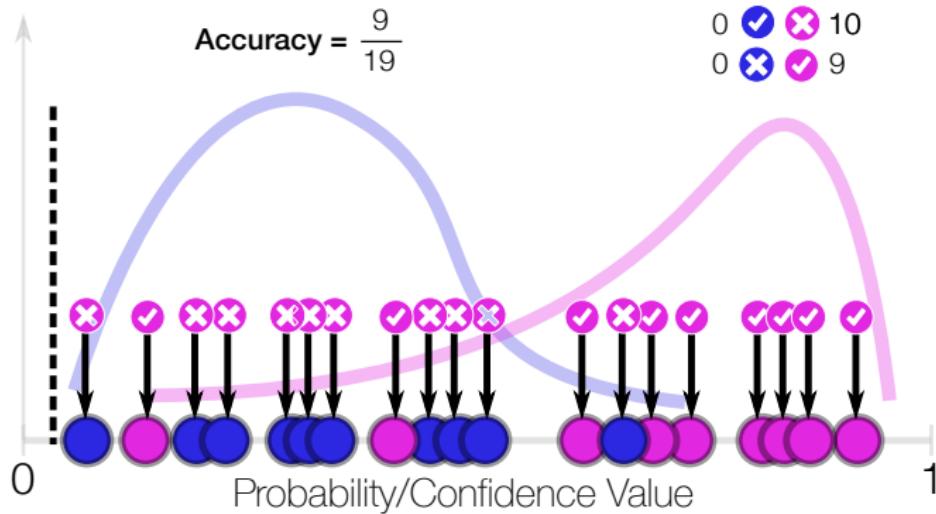
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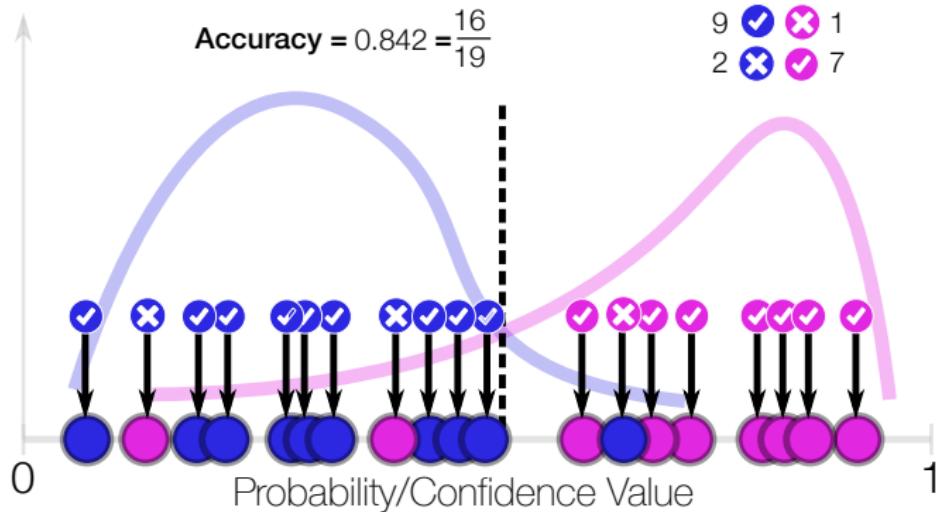
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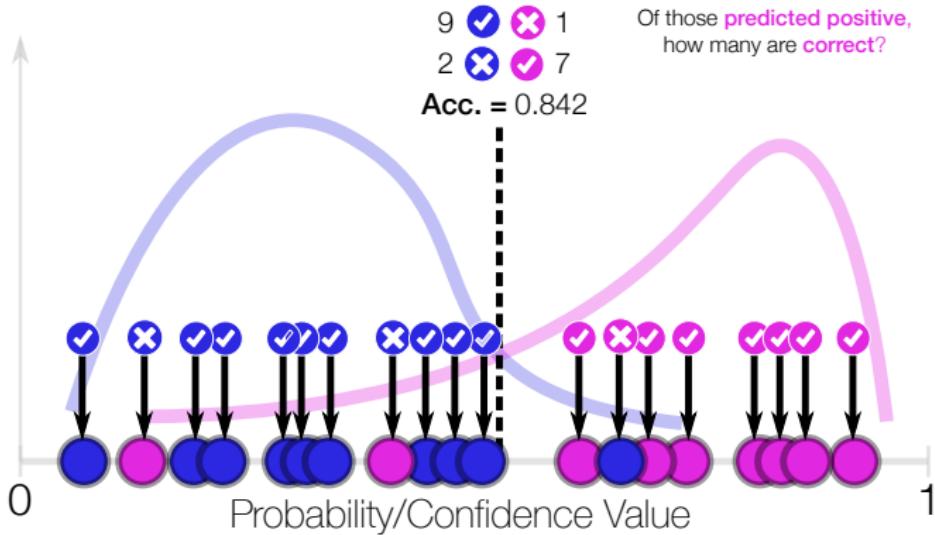
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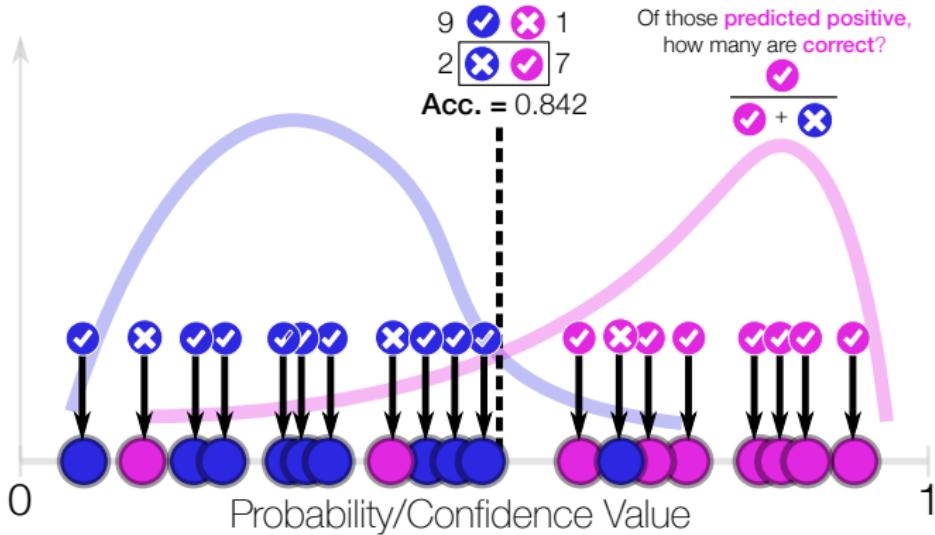
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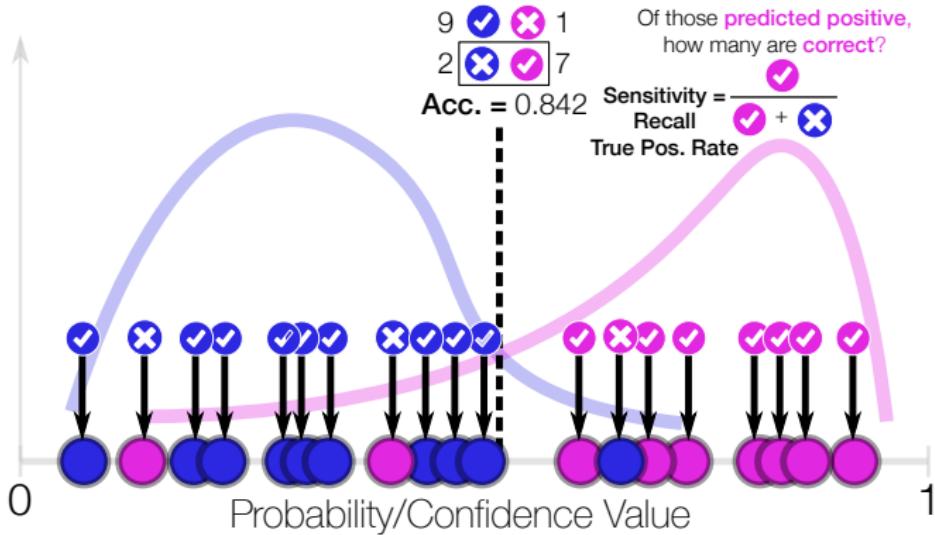
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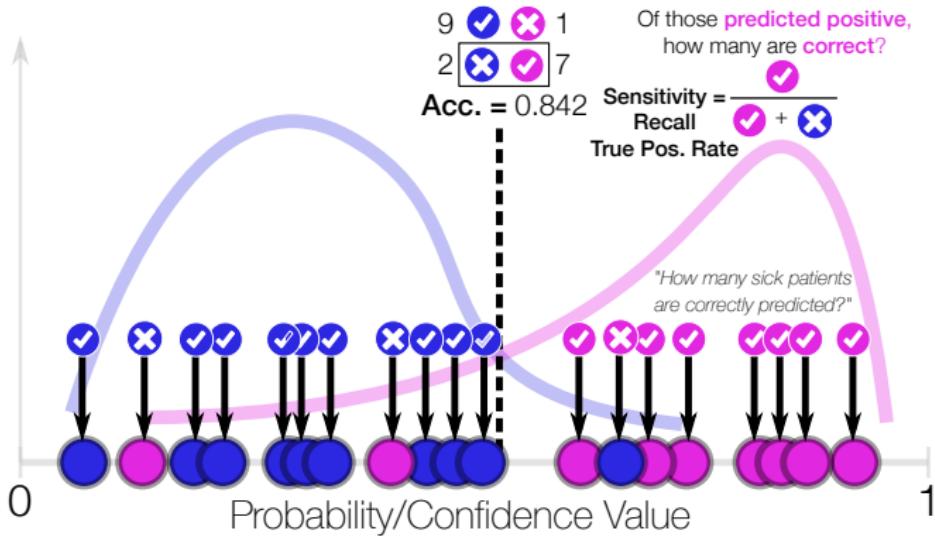
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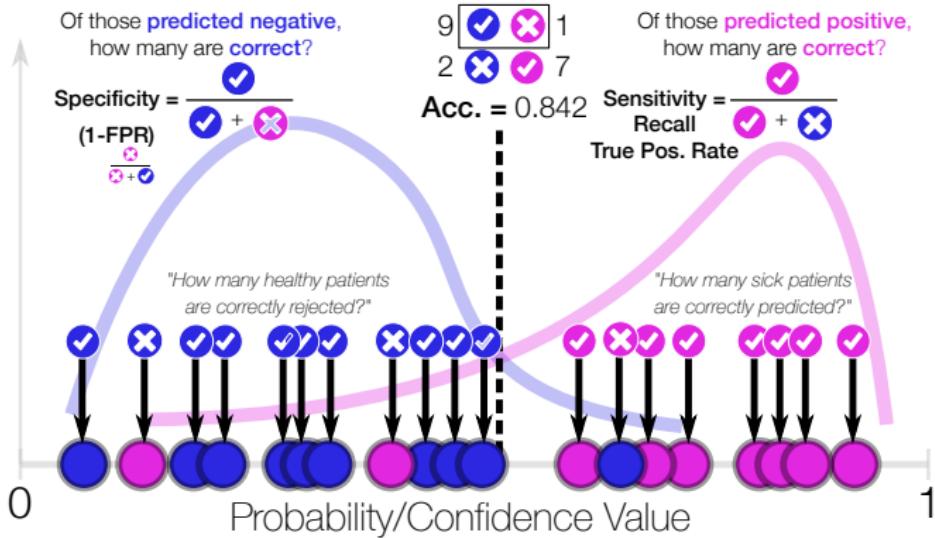
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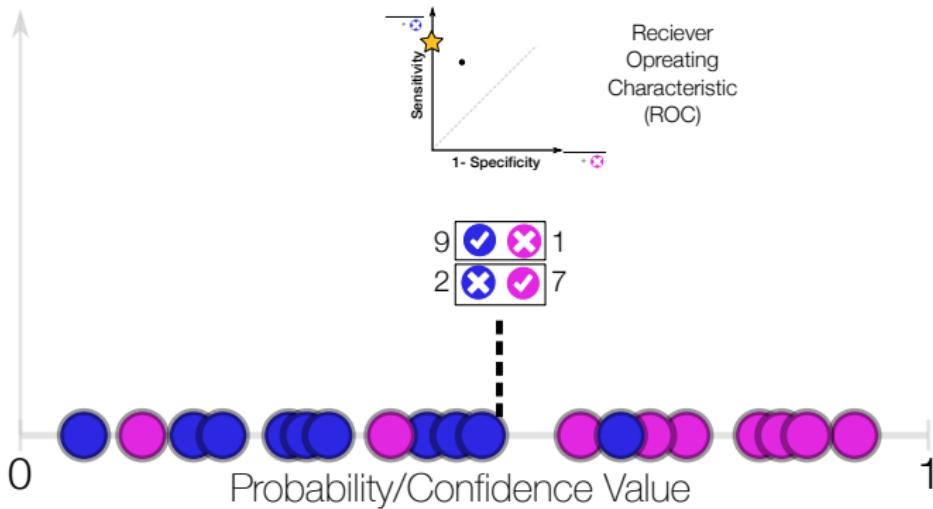
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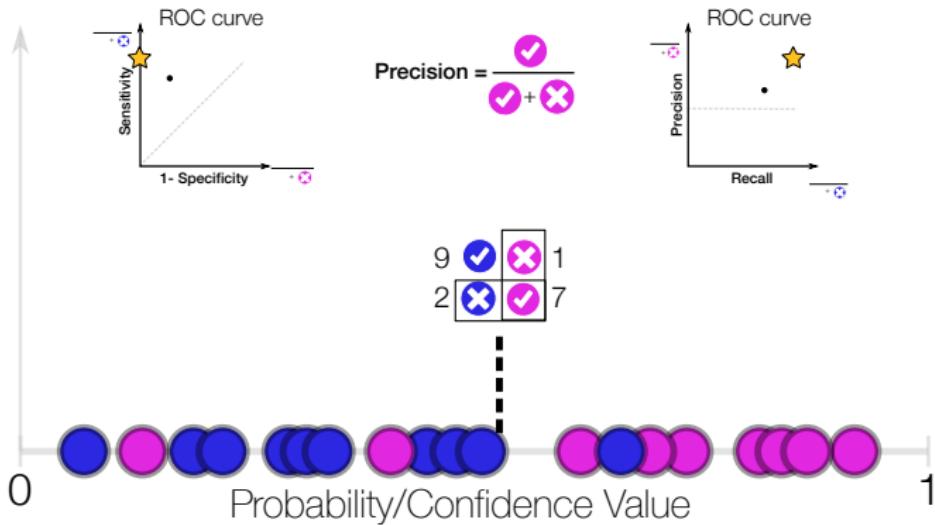
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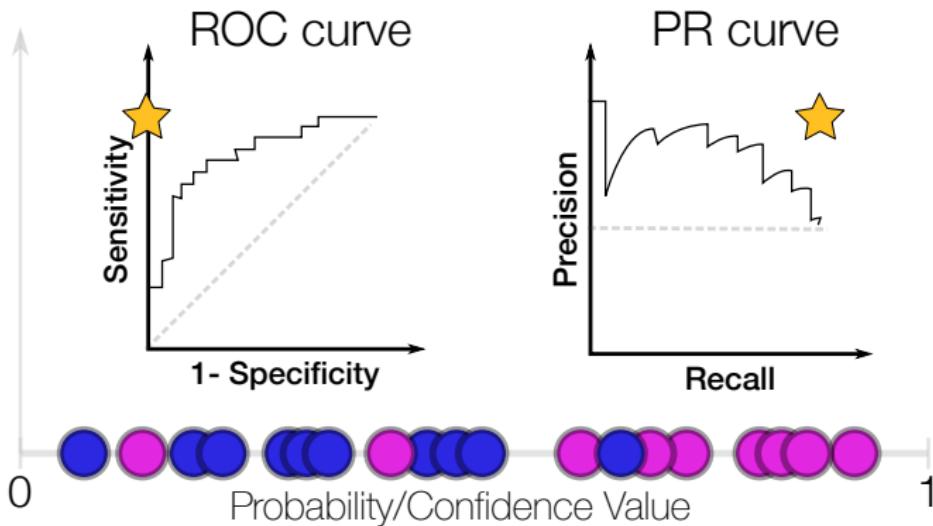
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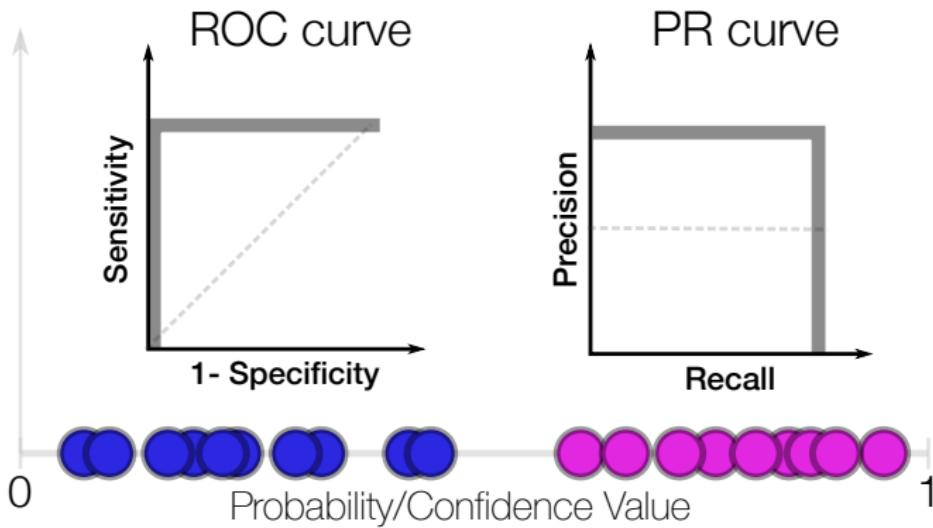
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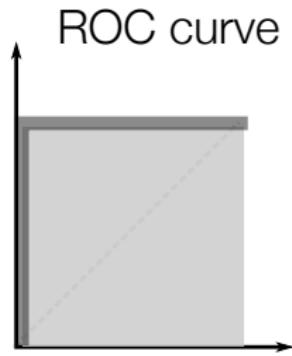
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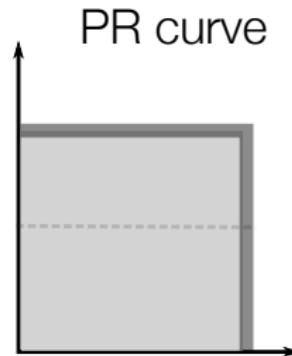
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AUC
ROC = 1



AUC
PR = 1

Animation: Variation in Threshold

Animation: Improved Models by ROC Curve

Animation: Improved Models by PR Curve

Animation: Variation in Standard Deviation

Animation: Variation in Class Imbalance

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Into the Notebooks we Go...

We will cover one new notebook today!

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