Probability Review

(slides by Noah Smith)

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- Conditional probability: $p(X = x \mid Y = y)$

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- Joint probability: p(X = x, Y = y)
- Conditional probability: p(X = x | Y = y)= $\frac{p(X = x, Y = y)}{p(Y = y)}$
- Always true: $p(X = x, Y = y) = p(X = x | Y = y) \cdot p(Y = y)$ $= p(Y = y | X = x) \cdot p(X = x)$

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- The difference between *true* and *estimated* probability distributions