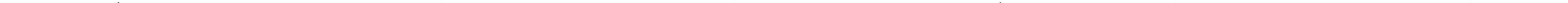
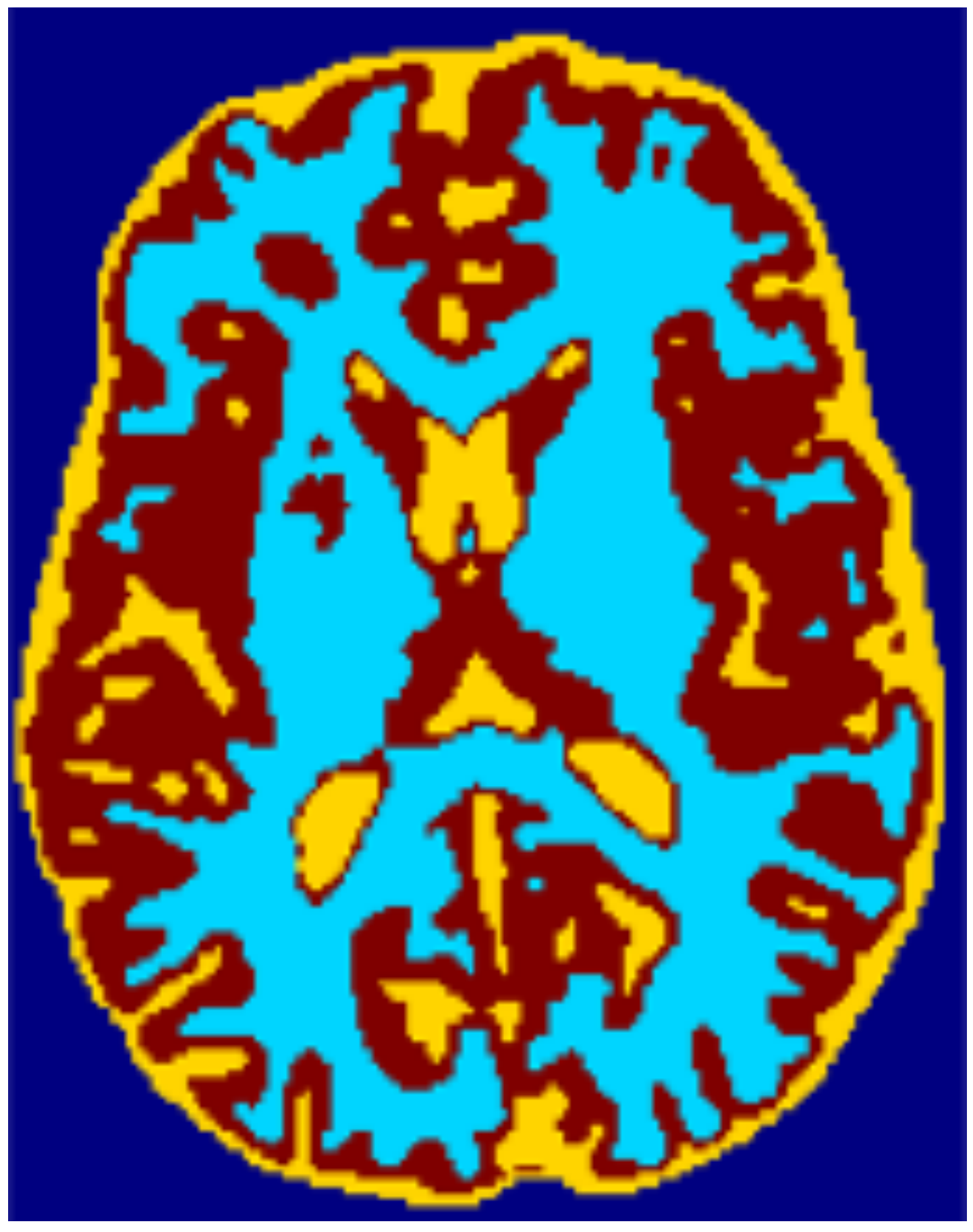
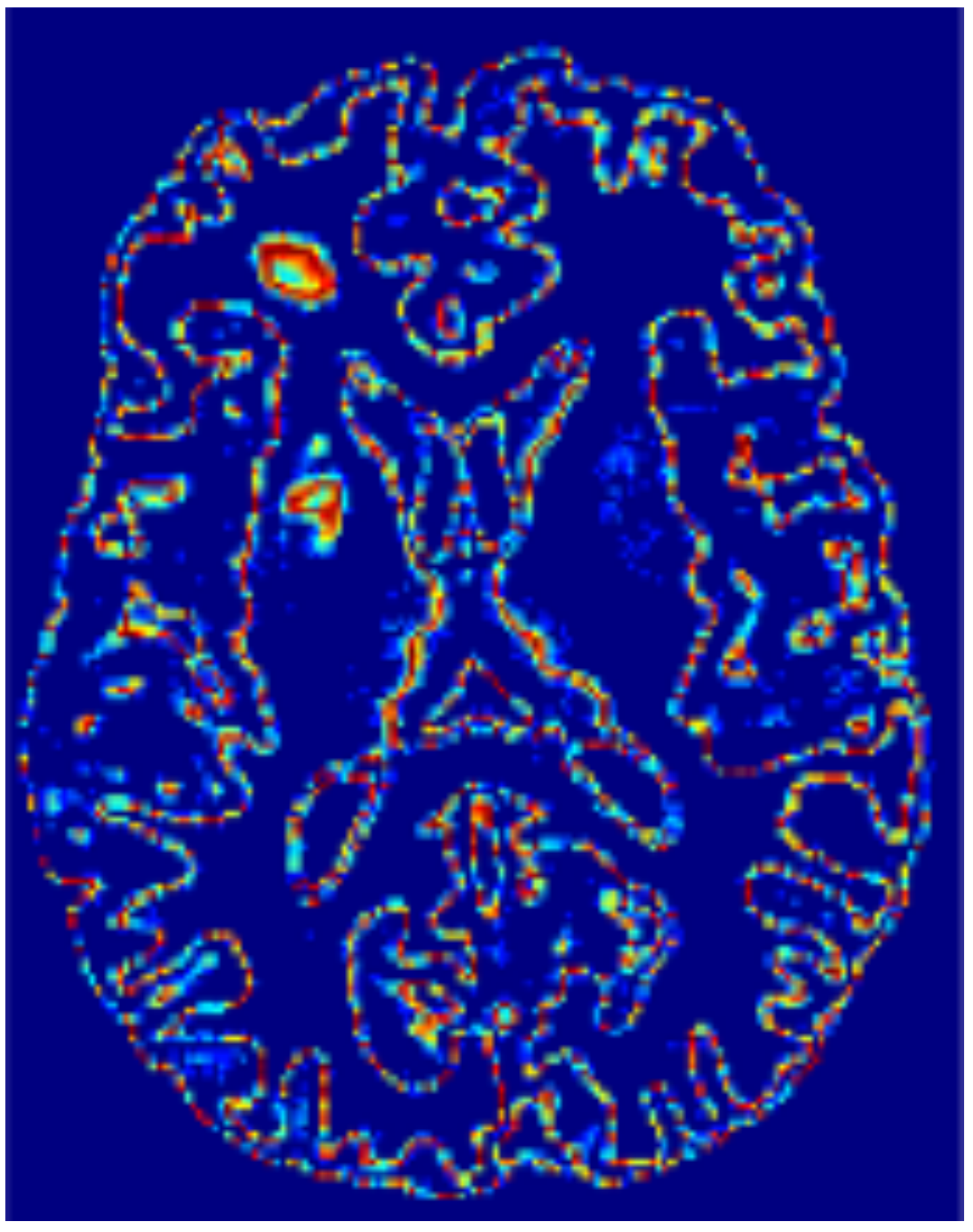
Why Sampling?



Uncertainty Estimation





Brain Tissue Segmentation

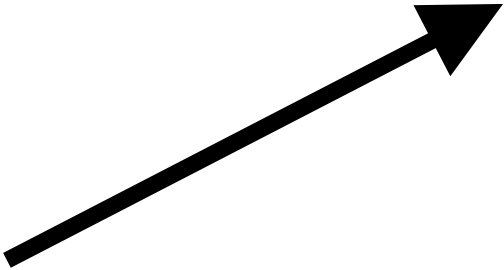
MAP Segmentation

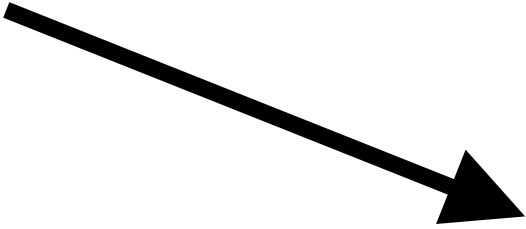
Not Enough

Expectation Maximisation

$$E_{P(x_i|x_{\sim i}y,\theta^t)}[\log P(y_i|x_i,\theta)]$$

$$\frac{1}{S} \sum_{\substack{s=1 \\ x^s \sim P(x|y,\theta^t)}}^{S} \log P(y_i|x_i^s, \theta)$$





Expectation becomes difficult to evaluate

$$E_{P(x_i, x_{\sim i}|y,\theta^t)}[\log P(y_i|x_i, \theta)]$$

x : data

y: hidden label

θ : parameters

Many More …

To approximate intractable expectations
- Need to sample

Why Sampling?

Uncertainty Estimation

Expectation Maximisation

$E_P($

Many More …

To approximate intractable expectations
- Need to sample

How perfect sampling? — Fills Algo

Relies on Acceptance Rejection Sampling