

Lecture 10: Quantifying uncertainties in Monte Carlo estimates

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Visualizing Monte Carlo uncertainty

Example: 1D

(This is Example 3.4 of Robert & Casella (2004))

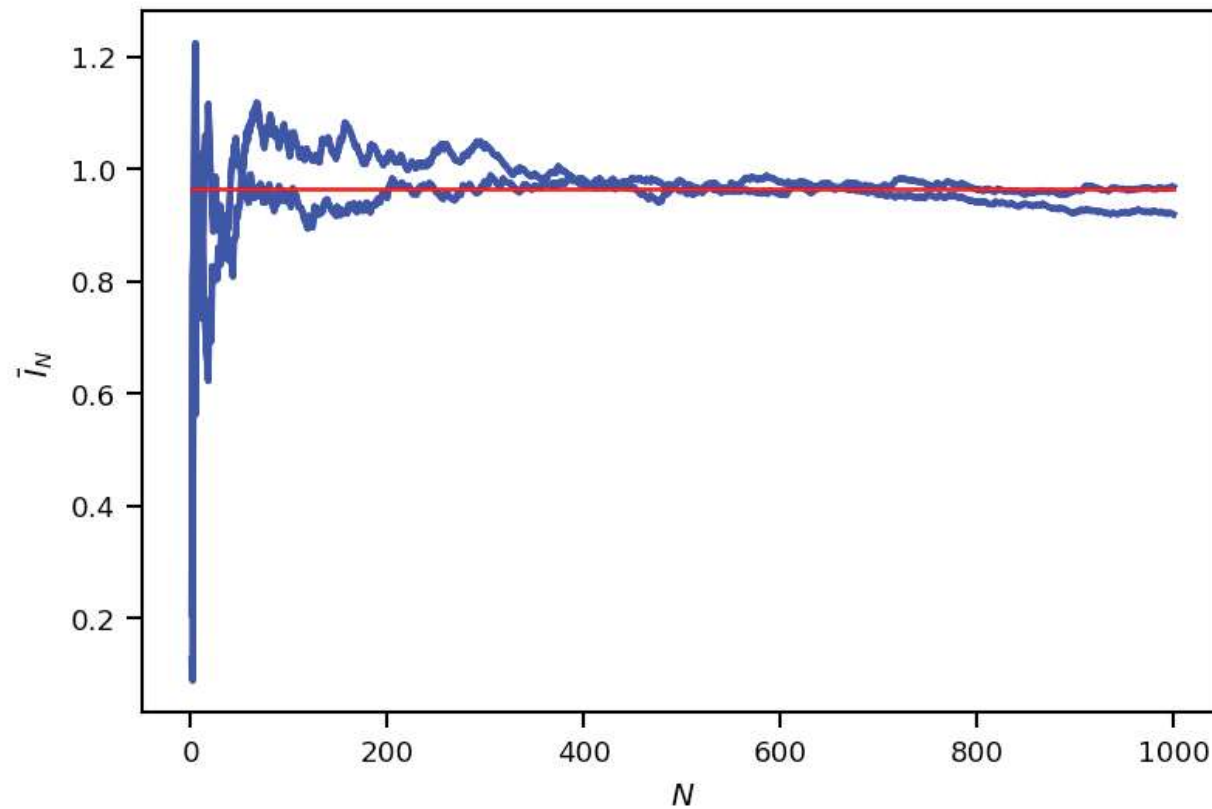
$$X \sim \mathcal{U}([0, 1])$$

$$g(x) = (\cos(50x) + \sin(20x))^2$$

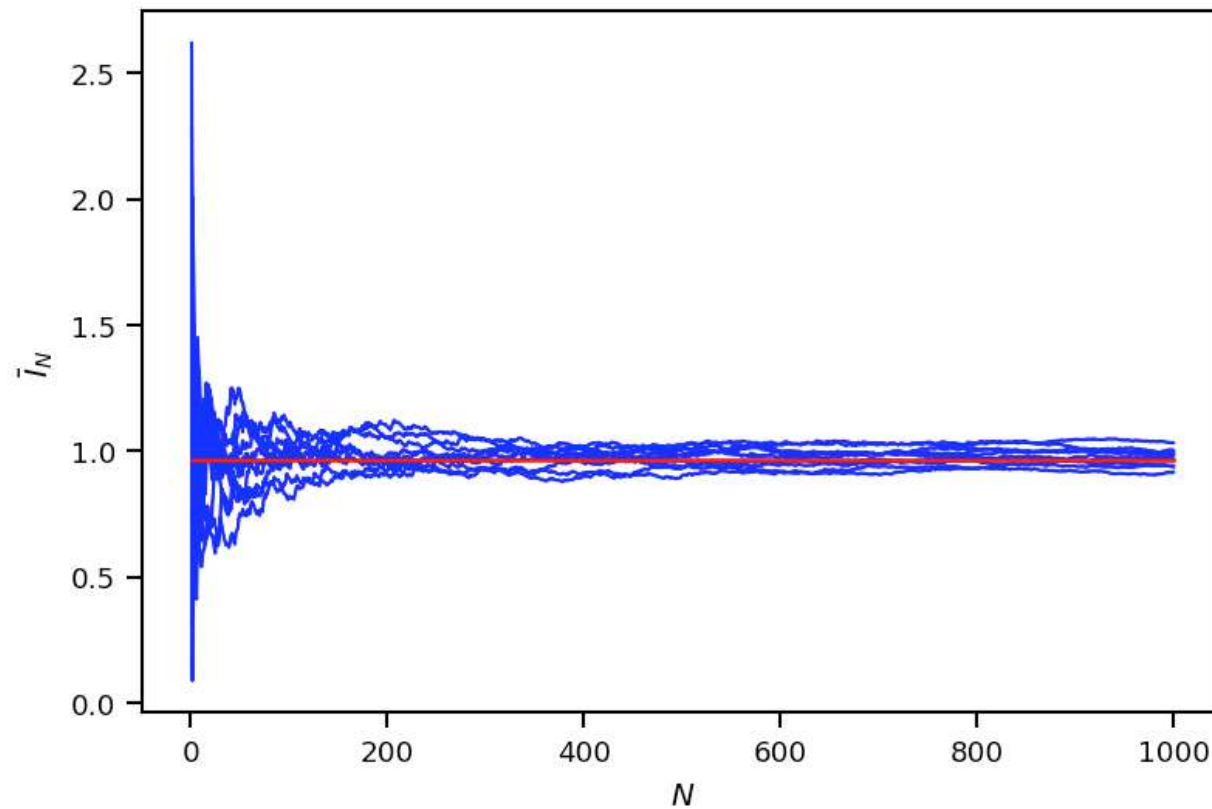
The correct value for the integral is:

$$\mathbb{E}[g(X)] = 0.965$$

Two different estimates



Ten different estimates



100 different estimates

