Imagine a world where computational simulations can be inverted as easily as running them forwards, where data can be used to refine models automatically, and where the only expertise one needs to carry out powerful statistical analysis is a basic proficiency in scientific coding. Creating such a world is the ambitious long-term aim of probabilistic programming.

The bottleneck for improving the probabilistic models, or simulators, used throughout the quantitative sciences...


Automated Variational Inference. An unconditional probabilistic program $f$ is defined as a parameterless function with an arbitrary mix of deterministic and stochastic elements.

1.1 Automated Variational Inference for Probabilistic Programming. Probabilistic programming languages simplify the development of probabilistic models by allowing programmers to specify a stochastic process using syntax that resembles modern programming languages. 2 Automated Variational Inference. An unconditional probabilistic program $f$ is defined as a parameterless function with an arbitrary mix of deterministic and stochastic elements.