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There is an arrow between hardware, models and algorithms

Modern hardware advancements have increased parallelism



As hardware improves previous hardware problems sub-routine

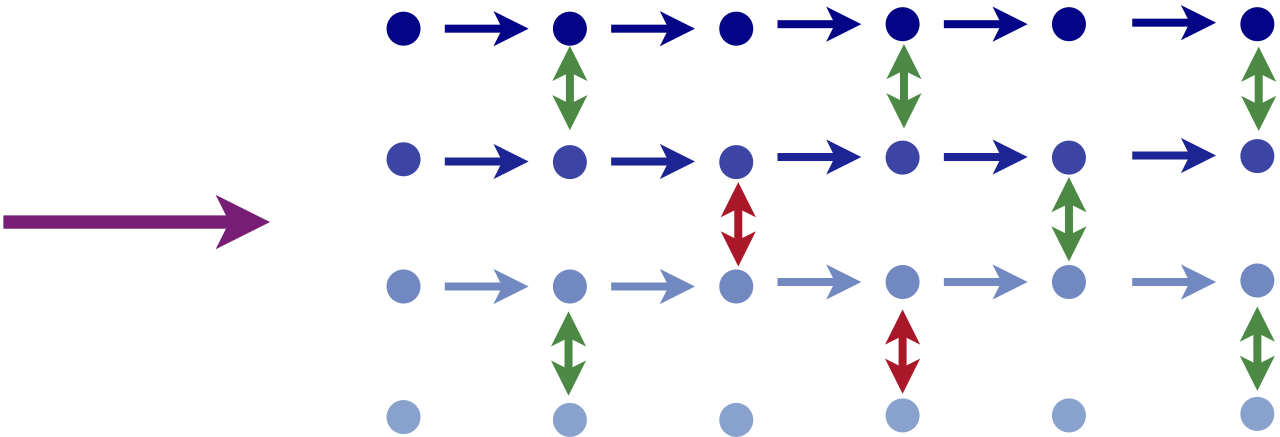
▶ We always find a way to push the limits of hardware to increase model complexity

Goal: design algorithms that scale with advancements in hardware and model complexity

Classical



Modern MC





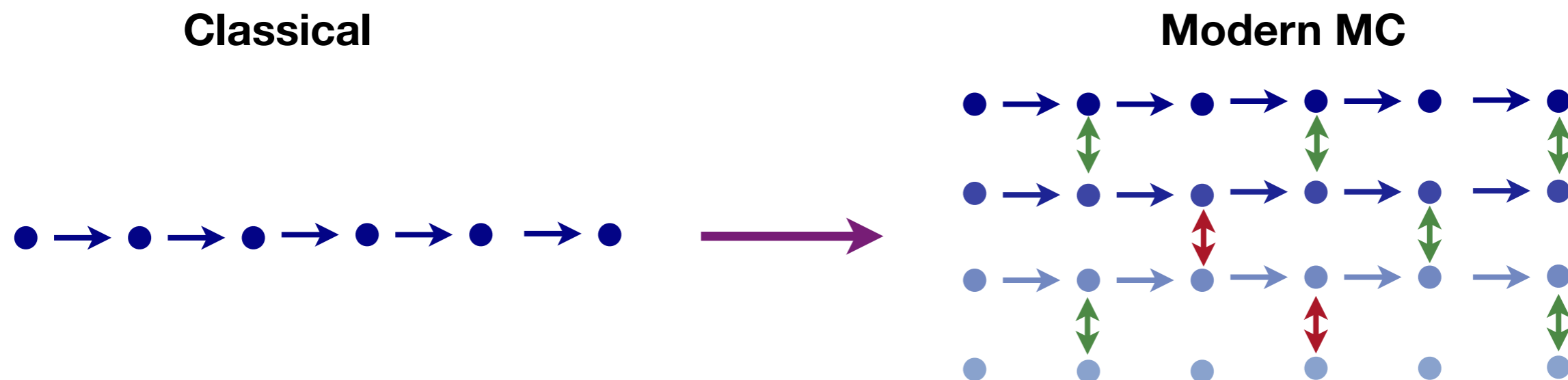
Adoption in Bayesian inference tied to computational advances with MCMC methods

Our creativity is limited by the tools we can use

Monte Carlo and Computation

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- ▶ There is an arms race between hardware, models and algorithms
 - ▶ As hardware improves previous hard problems become sub-routines
 - ▶ We always find a way to push the limits of hardware to increase model complexity
 - ▶ Adoption in Bayesian inference tied to computational advances with MC methods
- ▶ Our creativity is limited by the tools we can use
- ▶ **Goal:** design algorithms that scale with advancements in hardware and model complexity
 - ▶ Modern hardware advancements have come with increased parallelism



GOAL OF THIS COURSE