

Peer Review

Review of: "Active Sequential Posterior Estimation for Sample-Efficient Simulation-Based Inference"

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The manuscript introduces a class of simulation-based inference techniques referred to as Active Sequential Neural Posterior Estimation (ASNPE). The method builds on previous simulation-based inference methods to improve computational efficiency and scalability. The proposed algorithm manages two objectives: sorting the generated model parameters in order of certainty in the posterior estimating NDE and minimizing the loss for the NDE (maximizing the estimated posterior). The authors apply this approach to the travel demand calibration setting, a high-dimensional inverse problem that requires computationally expensive traffic simulators.

The manuscript is well-written and organized. It does a good job of educating the reader on the approach and making a case for it. I have a few comments listed below:

- On page 3, the authors write, "Provided q_{ϕ} is sufficiently expressive." Please provide some guarantee for such expressiveness or elaborate on the challenge there. Also, the claim of convergence to the true posterior is simply stated. Please provide a citation or proof for this claim.
- Given that the aim is efficiency and scalability, can you emphasize the gains therein in chapters 4 and 5?
- The value (page 7): small spelling error

Declarations

Potential competing interests: No potential competing interests to declare.