Robust Bayesian Inference for Distributed Sensor Networks

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Deploy drone fleet to inspect hazardous area before sending first responders.

Drones need to collaborate and exchange information without a human directing actions.
Bayesian inference methods enable collaborative learning

- Hamiltonian Monte Carlo (HMC)
- Metropolis-adjusted Langevin algorithm (MALA)
- Stochastic gradient Langevin dynamics (SGLD)
- Distributed Langevin Dynamics (DLD)
- …..

**Drawback:** manual tuning and parameter calibration
Our work: automating parameter calibration

- Subsampling MH
- Dual averaging optimization
- Distributed Langevin Dynamics

Smart grid sensor

- Self-driving cars
- Drones