
BNNs with Stan and Edward

May 18, 2018

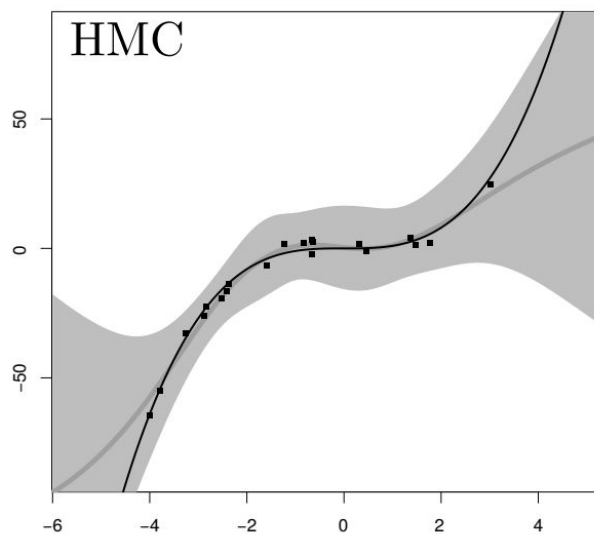
github.com/eaott/edward_stan_intro

Edward

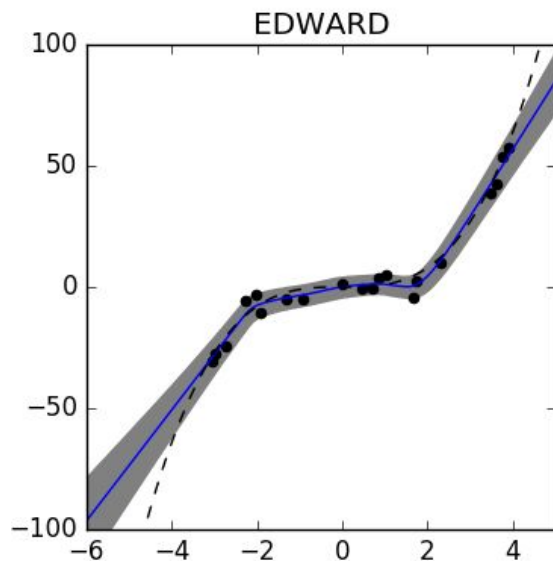
- TensorFlow wrapper for probabilistic programming
- Can re-use a lot of TF code
- Built for variational methods
- HMC seems newer
- edwardlib.org

Stan

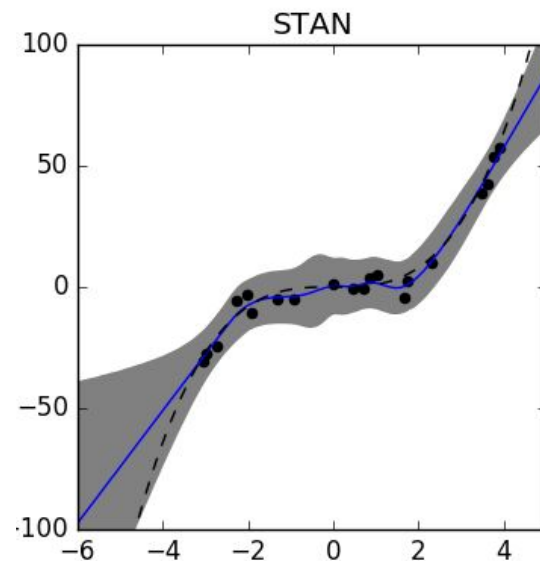
- ML language with interfaces in Python, R, MATLAB, Julia, cmd, ...
 - Can port models across interfaces
- Built for HMC / NUTS (no u-turn sampler)
- Need to compile STAN code (programmatically)
 - Requires C++ compiler, cython
 - Comes with BOOST, Eigen, etc., but can customize
- mc-stan.org



Original paper:
MCMCstuff in MATLAB



15,000 samples rather
than 30,000



	Edward	Stan
Posterior predictive draws	VI: easy HMC: finicky	HMC: easy
NN features (ReLU, etc.)	Easy, part of TF	Time-consuming
HMC model parameters	Automatically transformed, not obvious	Straightforward
Functions with many parameters	Trivial	Bookkeeping
Ragged arrays	TF: no Python: yes	None
Parallel chains	Manual	Yes
Broadcasting	Easy, part of TF	Sometimes