PyMC3 Tutorial

Aditya Gudimella,
Nandita Damaraju,
Prashant Srinivasan

PyMC

- Python module that implements ***Bayesian statistical models***, including ***Markov chain Monte Carlo***.
- Fits Bayesian statistical models with Markov chain Monte Carlo and other algorithms.
- Includes a module for modeling Gaussian processes.
- Sampling loops can be paused and tuned manually, or saved and restarted later.
- Creates summaries including tables and plots.
- Several convergence diagnostics are available.
- Extensible: easily incorporates custom step methods and unusual probability distributions.
- Like MATLAB, MCMC loops can be **embedded in larger programs**, and results can be analyzed with the full power of Python.

Why PyMC?

- Continued active development unlike OpenBUGS
- Break models into components and reuse those components.
- Since pyMC is a library instead of an entire package, it is easier to use it in conjunction with other software
  - File-reading (Numpy, Pandas)
  - Graphing (Matplotlib, Seaborn)
  - Further data-analysis
  - Publishing
- Comes with full power of Python