

# Construction of Nonparametric Bayesian Models from Parametric Bayes Equations

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## Motivation

- ▶ Nonparametric Bayesian (NPB) models  
= Bayesian models on  $\infty$ -dimensional space
- ▶ Dirichlet process, Gaussian process:
  - ▶ Posteriors are conjugate
  - ▶ Finite-dimensional discretizations are in exponential family

## Question

Which NPB models are conjugate?

## Results

- ▶ NPB conjugacy  $\Leftrightarrow$  Finite-dimensional conjugacy
- ▶ NPB model inherits exponential family properties
- ▶ “Recipe” for construction from exponential families
- ▶ Construction example: Infinite rankings