Some Notes on 3F8 Lecture Slides

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Intro to Inference

- remember to check the online version of lecture notebook:
  - `https://github.com/cambridge-mlg/3F8`
- what is the posterior distribution in the 'radioactive decay' example?
- ~~how to do the Gaussian approximation of a posterior?~~
- conjugate priors[1]
  - Q3 from Example Paper 1: Beta(prior) + Bernoulli(likelihood) $\Rightarrow$ Beta(posterior),
- properties of Gaussians
  - products of Gaussians are also Gaussian $\Rightarrow$ conjugate to itself
  - marginal/conditional of multivariate Gaussian are also Gaussian
- comments on the recommended textbooks:
  - MLPP and PRML are quite useful resource for Bayesian[2]
- Bernouli Distribution Squeeze on the boundry(Q3)

[1] `https://en.wikipedia.org/wiki/Conjugate_prior`

[2] solution to PRML problems: `https://github.com/zhengqigao/PRML-Solution-Manual`

Regression

- ML methods for regression find statistical dependencies not causal relationships:
  - for intro to 'causal', check Larry Wasserman's note:
    `http://www.stat.cmu.edu/~larry/=sml/Causation.pdf`
- Q6: noise can set as 'heavy tail distribution'[3]

[3] `https://en.wikipedia.org/wiki/Heavy-tailed_distribution`