

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 priors¹
 - Q3 from Example Paper 1: $\text{Beta}(\text{prior}) + \text{Bernoulli}(\text{likelihood}) \Rightarrow \text{Beta}(\text{posterior})$,
- 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 Bayesian²

¹https://en.wikipedia.org/wiki/Conjugate_prior

²solution 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

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