Lecture 20: Bayesian decision theory

- I showed the parallel between the data case and the no-data case.
- I discussed the two step solution for Bayesians: prior to posterior, then solve no-data problem for posterior.
- I showed how Bayesians can simply minimize *posterior Bayes risk*.
- I started to prove the false but nearly true assertion that Bayes is equivalent to admissible.
- I proved Bayes, positive prior density, continuous loss, finite Bayes risk imply admissible.
- I sketched a proof that admissible implies Bayes using the separating hyperplane theorem and the Ries Representation theorem.
- I noted that the set of loss functions needs to be closed to prove the existence of admissible or Bayes procedures.
- I drew the parallel with the Neyman Pearson lemma.
- I did one prior to posterior calculations: for a $N(\mu, 1)$ sample with a $N(\mu_0, \tau^2)$ prior for μ.

Coverage in text and notes

- Chapters 11 and 12.
- Course slides on "Decision Theory".
- Course slides on Bayes estimation.
- Course notes pages 150-154.