Bayesian methods and modern statistics

Fall 2023

Schedule

Week	Date	Topic	Reading	Notes	Assignment
1	Mon Aug 28	lab: welcome			hello R
	Tue Aug 29	intro, history, notation	Ch. 2		hw 0
	Thu Aug 31	probability, exchangeability	Ch. 2		hw 1
2	Mon Sep 04	NO LAB			
	Tue Sep 05	single parameter estimation	Ch. 3		
	Thu Sep 07	Poisson model and conjugacy	Ch. 3		hw 2
3	Mon Sep 11	lab: MLE and MAP estimator			
	Tue Sep 12	reliability, exp. families	Ch. 3	,	
	Thu Sep 14	prediction, Monte Carlo intro	Ch. 4	,	hw 3
4	Mon Sep 18	lab: prior sensitivity and change of variables			

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	Tue Sep 19	Monte Carlo integration	Ch. 4		
	Thu Sep 21	the normal model	Ch. 5		
5	Mon Sep 25	practice and review			
	Tue Sep 26	catch up / review			
	Thu Sep 28	Exam I			
6	Mon Oct 02	NO LAB			
	Tue Oct 03	the normal model II	Ch. 5		hw 4
	Thu Oct 05	estimators	Ch. 5	,	
7	Mon Oct 09	lab: predictive checks and bias			
	Tue Oct 10	Gibbs sampling	Ch. 6		ec
	Thu Oct 12	MCMC diagnostics	Ch. 6		hw 5
8	Mon Oct 16	NO LAB			
	Tue Oct 17	NO CLASS			
	Thu Oct 19	multivariate normal (mvn)	Ch. 7		
9	Mon Oct 23	full conditional review			
	Tue Oct 24	mvn parameter estimation	Ch. 7	,	hw 6
	Thu Oct 26	hierarchical modeling intro	Ch. 8		
10	Mon Oct 30	traceplots and MCMC diagnostics			
	Tue Oct 31	intro to Bayesian regression	Ch. 9		hw 7

Week	Date	Topic	Reading	Notes	Assignment
	Thu Nov 02	Bayesian regression II	Ch. 9		
11	Mon Nov 06	Hierarchical modeling and Gibbs sampling practice			
	Tue Nov 07	Bayesian regression III *Guest lecture:* Prof. Peter Hoff	Ch. 9		hw 8
	Thu Nov 09	NO CLASS: read chapter summaries			
12	Mon Nov 13	exam practice			
	Tue Nov 14	review			
	Thu Nov 16	Exam II			
13	Mon Nov 20	NO LAB			
	Tue Nov 21	Bayesian regression example + stan intro			
	Thu Nov 23	NO CLASS			
14	Mon Nov 27	rstanarm			
	Tue Nov 28	intro to Metropolis algorithm	Ch. 10		hw 9
	Thu Nov 30	Metropolis-Hastings	Ch. 10		
15	Mon Dec 04	MCMC practice			
	Tue Dec 05	MCMC and HMC	Ch. 10		
	Thu Dec 07	final review			