Thayer School of Engineering at Dartmouth

Bayesian Statistical Modeling and Computation

ENGG 107

Problem Set 2

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1. **Review an example script we discussed in class.**
2. **Review at least two other example scripts (for example from code replication repositories from papers in your application area).**
3. **Review the key sources already assigned as reading with a special focus on:**
   (a) **Labs 0 to 3 in: Applegate, P. J., & Keller, K. (Eds.). (2016). Risk analysis in the Earth Sciences: A Lab manual. 2nd edition. Leanpub. Retrieved from** `https://leanpub.com/raes`
4. **Use a Monte Carlo simulation method to:**
   (a) **determine the mean and the 95 percentile of sample from a known uni-variate normal distribution with a mean of zero and a standard deviation of one with your estimated uncertainties.**
   (b) **determine the value of pi with your estimated uncertainties.**
5. **For each task:**
   (a) **Produce a pdf file summary that documents the task, your approach, any assumptions, your results, and includes at least one figure that illustrates your main finding(s).**
   (b) **Please discuss your choices (for example about how to select samples and how to determine convergence). For each choice, provide a brief overview of plausible choices and how you made your specified choice.**
   (c) **Address whether (and if so how) these analyses are reproducible**
   (d) **Include the code as an appendix in the pdf file**
   (e) **Check whether you have all required citations**
   (f) **Check whether you have assigned a copyright and a license to your codes**
   (g) **Check whether the figure follows standard design praxis (see, for example:** `https://www.nature.com/documents/nature-final-artwork.pdf`**)**
   (h) **Submit your summary pdf as well as your code to Canvas**