

CS341 SYSTEMS BIOLOGY I

HOMEWORK ASSIGNMENT #11 – READING (TUES NOV 14, 2017)

1. READING

The goal of this reading assignment is to better understand the issues concerning cost function design for models of biological systems.

Read “Modelling genetic networks with noisy and varied experimental data: the circadian clock in *Arabidopsis thaliana*” by JCW Locke, AJ Millar, and MS Turner, *Journal of Theoretical Biology*, 2005 (emailed by Stephanie)

- (1) What is LD?
- (2) Describe (in English) each of the terms of the cost function and the corresponding data.
- (3) On page 387, the authors make the statement:

The inadequacies in all the annealed solutions must be explained by the structure of the network, as the global search shows that no distribution of parameters gives a good fit with this network structure.

This is a bold claim. Why?

- (4) According to the authors, their approach to cost-function development and their optimization procedure are useful and important. Why?