CSC 450**, Senior Seminar**

**Journal Article Discussion**

***A Cellular Automata Model for Traffic Flow - Estimating the Effect of Turning***

Discuss these questions as a group, and select one person to type up the answers

**Group Members:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. What is the research problem the paper addresses? What is the motivation for the problem? What is the significance of the problem?
2. In this paper the authors conduct an ***experiment*** to investigate the effect of turning in their cellular automata model*.* For this question, consider specifically the results presented in **Figure 3**. In the experiment used to generate these results, what is the *treatment* (i.e., what variables do the researchers change or manipulate)? What variables are *controlled* (i.e., what variables are fixed or remain the same across simulations)?
3. The experiments conducted lead to several findings. For each one, describe the evidence that is presented in the paper to support the finding. In particular, what figures or tables demonstrate the result, and *how* do the figures/tables demonstrate this?
   1. A higher rate of turning results in traffic moving more slowly
   2. The relationship between turning and the efficiency of traffic can be described by a power law.
4. Does the author describe other work in the topic? If so, how does the research described in the paper differ and/or build from the other work?
5. **Equation 2** and **Equation 3** both predict the light cycle length, , for which the average velocity is first less than , where is the average velocity in a model without turning. For a given turning probability and density do you expect this equation to hold for Willimantic? Why or why not? (Hint: describe how the model is or is not representative of Willimantic)
6. How might this work be followed up on? What relevant questions could be investigated by modifying the cellular automata model used here?