INFORMATICS CAPSTONE LETTER OF AGREEMENT

Dr. James Howison
University of Texas at Austin
2/1/2024

RE: I379C (Capstone) statement of work for Michael Chen

Dear Dr. Howison:
Thank you for agreeing to act as supervisor on my Informatics-related project, Visualization of Heating and Cooling Demands. This letter summarizes our discussions thus far and will serve as our agreement regarding the particulars of the project.

1. Project Objective

The objective of this project is to create a visualization system for a more intuitive understanding of Manual J heating and cooling calculations for homeowners and members of the home construction economy. Developing a visualization of HVAC loads on a time-series level throughout a particular year can help inform better decisions when deciding on HVAC equipment sizing from both a homeowner and contractor perspective, particularly in avoiding oversized systems. This project will work to create a prototype generalizable time-series visualization system based on inputs including home schematics, local weather and climate conditions, and real and simulated loads.

2. Project Activities and Methods

I will undertake the following tasks:

- Perform background research on current energy simulation programs and visualizations (ManualJ, ResStock, NEEP Visualizations, etc.)
- Find and aggregate data of load calculations, real heat loads, and potentially simulated load data over time.
- Test and evaluate visualizations on how they communicate loads and sensible temperatures over time and on design temperature days.
- Communicate visualization system in a final report and to any potential stakeholders.

3. Project Deliverables

I will produce the following deliverables:

- Documented database of collected relevant data, including NREL ResStock modeling data tested and historical and modeled heat loads.
- Visualizations of expected heating demands for a system relative to the capacity of a potential system over time, with the goal to intuitively communicate how a properly sized system will be able to meet comfort standards for a large majority of days.
- A report on the iterative process taken in data collection and development of visualizations, as well as conclusions and recommendations for further research or potential stakeholders.

4. Preliminary Schedule

Although we recognize that unforeseen events may alter my plans, I propose this preliminary schedule. I will contact you immediately if work falls significantly off this schedule.

- 2/9: Capstone proposal form and letter of agreement due, work officially starts.
- 2/16: Background research conducted on current simulation systems, mock ResStock simulation set up.
- 3/1: Complete data collection of historical ResStock load calculations and open-source heat loads.
- 3/15: If running large scale simulations seems possible, complete data collection of simulated loads and corresponding sensible temperatures.
- 3/22: Sketches/low-fidelity visualizations designed.
- 4/12: Time-series and any additional intuitive visualizations completed. Evaluate whether visualization system can be generalized on a higher level.
- 4/23: Communicate results in a final report.

5. Work Expectations

My expectation is that I'll be able to complete at least a prototype visualization system in a timely manner, with a widely generalizable tool being the end goal to work towards and communicate.

6. Communication Plan

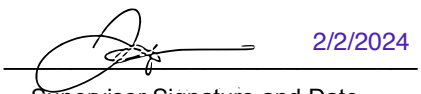
We can communicate through zoom/in person if necessary, on a biweekly or weekly basis, depending on how much trouble I may be having or if I need any additional resources. I'll be sure to schedule any meetings accordingly on your calendar. Any communication outside of live meetings can be conducted through email.

7. Monitoring and Evaluating Student Progress

Our weekly meetings will include quick updates on student progress and a quick evaluation on how the schedule and deliverables are being completed.

Changes to this statement of work will need to be approved by you and the I379C instructor.

Per class policy, you will need to complete a mid-semester and final evaluation form that the I379C instructor will send you via email. By signing this form, you agree to supervise my capstone project for the entire duration of the semester, to complete the required mid-semester and final evaluation forms, and to permit me to share my reflections from the project as specified in the course syllabus (please see attached). My capstone project will involve approximately 60 hours of work and will involve activities that allow me to apply knowledge and skills that I have completed throughout my Informatics major coursework. My I379C instructor iSchool instructor has the final approval of grades for this project.



2/2/2024

Supervisor Signature and Date

Michael Chen 2/1/2024

Student Signature and Date