CSCI 3434, CU Boulder **Prof. Rafael Frongillo**
Fall 2019 **Problem Set 1**

Before we get to the fun stuff, some important reminders from the syllabus:

- **Do not use external sources** beyond the materials linked to on the course website to solve these problems.
- You are encouraged to work with (≤ 2) other students, but you must **write your solutions independently**.
- Be sure to **list your collaborators** by name clearly at top of your submission, or "no collaborators" if none.

These problems are all from the book. The letters correspond to the section of the book: the [H]omeworks starting page 301, and [M]iscellaneous [E]xercises starting page 315. For example, H1.1(b,c) denotes Homework 1, problem 1, parts (b) and (c).

1. H1.1(b,c) [3 + 4 = 7 pts]
2. H1.2 [4 pts]
3. H1.3 [5 pts]
4. ME.3 [5 pts]
5. H2.2 [8 pts] (point breakdown: 3 for the construction of the DFA/NFA M accepting $\mathbf{rev}(A)$, 5 for the proof that your construction works, i.e., that $L(M) = \mathbf{rev}(A)$)