Rubric for 6.141 Challenge Design Document (CDD)

Prof. Seth Teller, April 2013

April 5, 2013

This rubric consists of comments occurring frequently from previous terms of 6.141. A CDD that incorporates all of the elements implied below generally will earn each member of your team an **A** technical grade. Each deficit will typically cause a grade decrease of a third of a step (e.g. from **A** to **A-**, then to **B+** etc.).

Communication Elements

- Your names, and your team number and team name (if any) were not on the first or title page. There was no footer showing page number, team number, and date. The filename was not `Team_X_CDD.pdf`.

- The visual elements of the document were not optimized for efficient reading. Specifically, some paragraphs did not open with a key point; title, headings and subheadings were not used or were not informative; formatting was not used where it would help a reader; useful illustrations or graphics were missing.

- Details of grammar and usage, as spelled out in class (hyphenation; apostrophes; proper antecedents of "this" etc.), were overlooked. Conventions of formatting (e.g., captions and labels) were not followed.

Technical Elements

- There was no crisp restatement of the Challenge task. There was no clear overview of your approach and the reasoning behind it, given before you dive into the technical details.

- There was no explicit statement of your "focus area," that is, of one aspect of the Challenge which is of specific collective interest to your team.

- There was no crisp statement of your assumptions. Or, you confused assumptions (things you are assuming to be true about the externalities of the Challenge) with design decisions (ways that you decide to proceed, given the assumptions you've made).

- The detailed statement of your technical approach was missing, incoherent, uneven, or inconsistent across sections, or there was no clear labeling of which team member(s) wrote each technical sub-section. (Note: deficiencies in specific sub-sections might yield lower technical/communications grades for the authors of those sections.)

- There was no sketch, diagram or model of your robot's physical body, including its sensor, CPU and actuator configuration.

- Your system block diagram was missing, incomplete or unclear, or in some other way did not match the prose content of your CDD. Some nodes or node labels (representing functional hardware or software modules) were missing or vague. Some edges or edge labels (representing inter-module communication semantics) were missing or vague.

- Some states and/or transitions in your finite state machine (FSM) diagram were not included or were incompletely labeled. This includes start states and end states. (Not all teams use FSMs; if you don't use one this comment does not apply to you.)

- There was little or no discussion of unplanned or unexpected events (e.g., collisions, block drops, "stuck" states, or lost states if applicable) along with your system's response. (Failures of provided sensors and actuators are out of scope; you should assume that any provided components will work as promised. However, if you are proposing to fabricate some sort of custom electronic or mechanical component, you should not necessarily assume that it will function as intended.)

- Your proposal did not include milestones. Or it did not include a capability description for each milestone, of the form: "On date X, our robot will be able to do Y." X could be each of the lab dates between now and the Challenge. Y could be any capabilities beyond those inherited from the structured labs: physical reconfiguration of the robot and/or fabrication of its block-handling elements; intermixing deliberative and reactive behaviors; perception; internal representations; motion planning and execution; localization; block collection, handling or deposition; state visualization; etc.

  The staff will base your graded lab checkpoints on these milestones, so it is in your best interest to define them crisply and thoughtfully.