**Title of DESIGN COMPETION SUBMISSION**

(should accurately describe the design, avoid vague general titles and abbreviations)

Presenting Author’s Name, Other Authors’ Names.

Authors’ Affiliated Institution(s).

***The length of the actual abstract must be no more than 1 printed page conformed to the established margins.***

**1) User Need:**

*1.a) Use Case*

Who is(are) your user(s) and what task(s) do they need to complete? *(Be sure to provide sufficient, relevant, background so that readers can understand the task from the user’s perspective.)*

*1.b) Problem Impact*

How do limitations in existing solutions impact the user’s ability to complete the task(s) specifically, and, in turn, how the user’s problems impact the public, more generally. *(Be sure to: review common relevant solutions, quantify the impact (frequency, severity, etc) on both the user(s) specifically, as well as, the public, more generally, and provide citations to support your statements.) Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.*

*1.c) Scope (Objective)*

Which limitations must your solution address in order to meet your user(s) need(s)? *(Be sure to indicate which limitations (described above) are within the scope of your project.)*

**2) Design Inputs**

*2.a) Constraints:*

Describe your strictest constraints and how they limited your design choices. *(Be sure to relate these constraints to your user’s need(s)) Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.*

*2.b) Requirements:*

Describe your highest priority requirements and how they relate to your user’s need(s). *(Be sure to define (values and units) and support (citations, mathematical modeling, or experimentation) each requirement)*

**3) Solution**

*3.a) Design - Intended Use:*

Show how your solution (in part or whole) is DESIGNED to be used, highlighting design choices that are either innovative and/or critical to understanding function. *(Be sure to include drawings and/or workflow illustrations highlighting choices KEY to understanding proper function)*

*3.b) Build - DEMO*

Show your solution (in part or whole) BEING used, highlighting built components that are either innovative and/or critical to understanding function. *(Be sure to include images of your built solution, highlighting components KEY to understanding proper function) Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.*

**4) Verification Results**

*4.a) Introduction (i = 1 … N)*

What requirements were included in this test? *(Be sure to include citations to support that your test was appropriate for these requirements)*

*4.b) Methods (i = 1 … N)*

What measurements were taken? How was your solution tested? What statistical analysis was used to determine if requirements were met? *(Be sure to include any citations, such as engineering standards, supporting your methods)*

*4.c) Results (i = 1 … N)*

Did your results verify that your solution met the requirement(s)? (Be sure to show evidence (tables, figures, statistical analysis) supporting your conclusion)

**Figure 1**. Sample Only

**5) Conclusion**

*5.a) Summary:*

Conclude whether or not your design was successful (met requirements without violating constraints)? *(Be sure to summarize results and discuss limitations of all verification testing)*

*5.b) Revisions*:

What revisions (need, design inputs, solution, verification) are necessary in order for your solution to increase its impact? *(Be sure to reference relevant verification results, or constraint violations*)

*5.c) Impact (Future Version):*

Assuming these revisions were made, describe how your solution will impact your user’s ability to complete the task(s), and how that might benefit society *(Be sure to refer to information from your need section)*

**References:** References to published literature. If it is necessary to cite references, insert the primary author's name and initials followed by the abbreviated journal title, the year of publication, and the volume and page numbers in parentheses. For example:

1. Dodd LG. Am J Clin Pathol. 1990;93:141-144.
2. Wanti A. et al. Science. 2018;6(26):972-1018
3. Oke A. et al. Nature. 2019;3(21):15-19

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