Author: Subha Annamalai

Date: Oct 10, 2023.

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Title Page

Guidelines For Documenting Engineering Notebook

FIRST Centerstage Challenge

Team Name: Robo-Phantoms

Team#:

Team Members

Ajay

Dhruv

Enter all your names in alphabetical order. Rule says not to enter Full name of any participant anywhere in Engg Portfolio.

Date Started:

Date Completed:

Coaches

Mr. Srinath

Ms. Subha

Contact Information:

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Guidelines for Documenting Engineering Notebook

1. **Project Overview**

Write a brief project overview.

1. **Team Information**

List the team members, their roles, and interests.

1. **Game Analysis and Strategy**

Clearly describe the goal, and write out an in-depth game analysis.

Outline strategies to solve the problem to achieve the goal. This may include Robot Path diagrams on the field map, decision trees showing different paths and outcomes based on the opponent team. You may compare A/B versions of the game strategies and include the test results here. Use the format laid out here for Tables, Charts, Pictures, Graphs and others. Refer to the corresponding section in the below linked document.

We will be using Font: Book Antiqua, Font Size: 12 for normal text, and Title Font Size: 14. Line spacing: 1.5. (The document will mention 2 for spacing, but we will use 1.5 instead.) for all documents. For other formatting guidance refer to the student-paper-setup-guide.pdf linked below.

<https://github.com/srinathmadasu76/FTC_2023/blob/main/Documentation/Procedures/student-paper-setup-guide.pdf>

1. **Research and Information Documentation**

Include Key findings from your research. Also, add a citation section to the resources and references. We will use student APA 7 citation format. Although, Engineering Notebooks will not fit in APA structure, we will use it as our formatting guidance.

<https://github.com/srinathmadasu76/FTC_2023/blob/main/Documentation/Procedures/student-paper-setup-guide.pdf>

1. **Brainstorming and Concept Development**

Describe the process of brainstorming, who were involved, and all the ideas that were generated during the session. Also document how those ideas were chosen or discarded.

1. **Comparative Analysis of Concepts**

Write down a thorough comparison of the concepts, discuss Pros and Cons. Write down all the criteria that was used for the comparison. We can use Tables for comparison. Follow all the guidelines from Student APA 7 format.

1. **Selecting the Preferred Design**

Document all the reasons for choosing the final design. Cost -Benefit Analysis can be included.

1. **Design and Development**
2. ***Conceptual Design***

Write about the initial design ideas, concepts involved, and sketches of the chosen Solution. Include the decision- making process in selecting the design.

1. ***Prototyping and Testing***

Provide all the details of the different prototypes made, purpose for making the protypes, testing procedure, and test results. Include materials used, diagrams, photographs, learning outcomes.

1. ***Modifications and Iterations***

You can iterate on the design, if necessary, based on the results. Write down any changes or improvements made in the design. Also, provide reasons for the modifications that were made. Document the entire process.

1. **Analysis and Selecting the Preferred Design**

Analyze the performance of various prototypes. Write in detail the performance results of the prototype, and the rationale for choosing the design.

1. **Detailed Design**

Provide all the detailed information about the chosen design from the previous step, which should include drawings, CAD designs, specifications, formulae, equations, calculations, simulations**, underlying science and math** concepts involved relevant information.

1. **Materials and Components**

List all the materials that will be needed for the design, including the budget and their sources. You may include Budget sheet in Appendix. Since we can may have to reference in other places.

1. **Project Implementation**

Include Software Codes, Build details, Machine configurations like Rev Hardware Client, Control hub, Driver hub configuration. It can also include Android studio installation and other relevant hardware/software configuration. The installation guides can be included in the appendices section and referenced from here.

1. **Results and Data**

Document the results and data which may include technical performances and your final output. Present the data logically in tables, images, charts, graphs and any other useful format.

1. **Lessons Learned**

Reflect on what went well, challenges encountered and solutions or workarounds that were implemented. Document both individual and team insight.

1. **Outreach Experiences**

Include concise table of summarize experiences and lessons learned from outreach with concise tables of outcomes.

1. **Mentorship and Knowledge Acquisition Strategies** Summarize how they acquired new mentors and/or acquired new knowledge and expertise from their mentors.
2. **Future Work**

Add future enhancements that can be made to the project here.

1. **Team Plan**

Write about team’s goals for the development of team member skills, and the steps the team has or will take to reach those goals. Other examples of what the plan could include are timelines, outreach to science, engineering, and math communities, and training courses.

Other examples of what the plan could include are Team identity, fund-raising goals, sustainability goals, timelines, outreach to non-technical groups, finances, and community service goals. The Team is an ambassador for FIRST programs. So, write down your plan to reflect that.

1. **References and Resources**

Include citations.

1. **Appendices**

Additional Drawings code snippets, budget docs, and related additional information relevant to the project.

If the team targets for CONTROL Award, they have to submit a separate two-page document. Teams should identify the control aspects of their robot that they are most proud of.