Guidelines for Written Reports

Written reports in this class will be evaluated on the basis of the following guidelines.

Layout and Design

- Title page
- Single column and single line spacing
- Consistent headings, no more than three levels
- Aesthetically pleasing, 12 point font (Times or Times Roman if possible), left-and-right justified
- Adequate margins and spacing
- Numbered pages, figures, equations, and tables
- Text references to all figures and tables in the body
- Figures and tables near text reference

Syntax

- Correct Spelling
- Correct Grammar
- Correct punctuation
- Effective Sentence Structure (no run-on sentences)
- Effective Paragraph Structure (single concept per paragraph, good lead-in sentences, continuity)
- Effective Proofreading (spelling and syntax error free, technical and logical correctness; read aloud for flow, understandability, and idea sequencing)

Style

- Rational Organization
- Clear flow and description of ideas
- Effective use of tables, graphs, and figures.
- Clear and concrete wording (no vague references: *given **all of the above** the robot...*)
- Sparing use of pronouns (often hard to determine antecedent)
- Use of active voice (passive voice is boring and lends unmerited authority)
- Use of descriptive adjectives and prepositional phrases (*…a blue, metal widget with three holes arranged in an equilateral triangle…* says more than *…a widget…*)
- Avoid using *very* and forms of the verb *to be.*

STRUCTURE OF PAPER

OPENING

1. Title Page

- No page number, but this is page one.
- Paper title (e.g., Proposal), your name, robot name, course number and name, instructor name(s), TA names

2. Table of Contents

3. Abstract

- Limit of 250 words
- No equations, tables, figures, graphs or references

4. Executive Summary *(Final Report only)*

- A one page description of the entire project that includes all salient characteristics. Must be different from the abstract.
- No equations, tables, figures, graphs or references

5. Introduction

- Background information that leads into the problem
- References to the literature
- Scope and objectives of project
- A walk-through the paper

MAIN BODY

The following description applies to autonomous mobile agent written reports. Other types of reports will require other module types, but the basic principles stated apply, in general, to any kind of technical report involving circuits, computer software, sensors, and mechanical structures.

6. Integrated System

- Complete organizational description of the system
- Block diagrams, flow charts, theory of operation
- High level functional and data descriptions
- No detailed circuit or algorithm descriptions
- Indicate how the given structure meets the specifications and objectives in the Introduction

7. Mobile Platform

- Scope, specifications, objectives
- Relate platform structure to objectives
- Hard, interesting or embarrassing lessons learned

8. Actuation

- Scope, specifications, objectives
- Types of actuation, purpose, reasoning behind choices
- Application (heads, wheels, legs, squirt gun, etc.)
- Scope, theory, objectives of motor control
- Characteristics of the motors you used: torque-speed
- Circuit drawings and theory of operation
- Actuation algorithms (code in appendix)
- Hard, interesting or embarrassing lessons learned

9. Sensors

- Scope, specifications, objectives
- For each sensor:
  - Scope, theory, objectives, references (vendor address, part number, phone)
  - How you applied the sensor in your project
  - Circuit drawings and theory of operation
  - Sensor software algorithm (code in appendix)
  - Sensor data base
  - Graphs of performance
- Sensor integration: Scope, theory, objectives (code in appendix)
- Hard, interesting or embarrassing lessons learned

10. Behaviors

- Scope, specifications, objectives
- Behavior algorithms (code in appendix)
- Hard, interesting or embarrassing lessons learned

11. Experimental Layout and Results

- Scope, specifications, objectives of experiments
- Data presentation (graphs, tables, figures) and interpretation

CLOSING

12. Conclusion

- Realistic summary of work accomplished
- Limitations of your work
- Cite areas that exceeded expectations and areas that can be improved
- Technical caveats for students to follow
- Future work:
  - What would you do if you started the project over?
  - What enhancements would you make?
  - What specifications would you change?

13. Documentation

- Complete References
- Correct IEEE form

14. Appendices

- Program Code
- Additional Circuit diagrams
- Other supplementary material

WRITING ORDER

Write the **Introduction, Abstract, and Executive Summary** last. Write a rough draft of the main body of the paper as the work is performed. Later modification and editing is easier than writing from scratch. Write Appendices any time. I write mine at the beginning because its the easiest to do and provides immediate psychological satisfaction of progress. In general, organize your report and write it in the order ***that is easiest for you (!)*** and then put the pieces together with glue words.