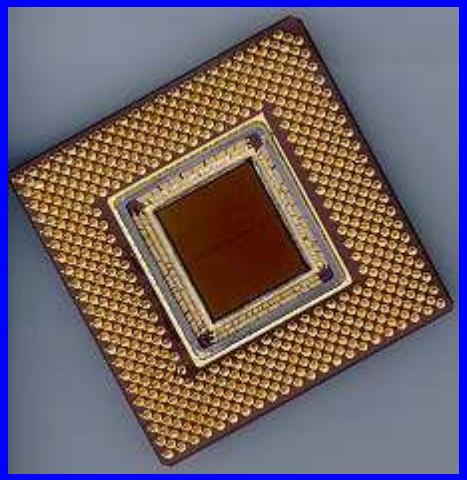


ECE 477 Digital Systems Senior Design Project

Special Session
Laboratory Notebook Bootcamp

Outline

- Importance of Lab Notebooks
- Notes About Lab Notebooks
- Pictures
- Weekly Summaries
- Update Record
- Writing Style
- Technical Detail

Importance of Lab Notebooks

- Good documentation standards (a valuable skill in industry)
- Allow others to reproduce your work
- A non-trivial portion of your 477 grade (initial 2%, midterm 4%, final 6%)
- An ABET outcome (60+% required on the final notebook to pass the course)

Notes About Lab Notebooks

- Use the provided template for lab notebook formatting (we thought it might be okay for you to use whatever template you wanted… we thought wrong)
- Lab notebooks are an INDIVIDUAL effort
  - DO NOT copy other team members entries or weekly summaries
  - DO NOT use your entries to describe the work of other team members

How Are Lab Notebooks Graded?

- Level of technical detail (Weight: 3)
- Pictures, drawings, and diagrams (Weight: 1)
- Update record (Weight: 2)
- Weekly summaries (Weight: 1)
- Technical writing style and clarity (Weight: 3)

Level of Technical Detail

- Along with writing style, the “meat” of your lab notebook
- How well are you explaining what you are doing? To what degree could somebody reproduce your work from what you have written?
- Use of hyperlinks to outside sources and material

Level of Technical Detail

- Technically-detailed entries answer these questions completely and concisely (where appropriate):
  - What did you work on?
  - How did you work on it? (What tools, test setups, etc. did you use?)
  - What was the result, and how does this affect the project?
  - What did you learn?
  - What next steps need to be taken on the project?

Good Technical Detail Example:

- *The feedback from today's presentation brought several discussions to the table: (1) The sensors on the quad-rotor will be housed in a carbon fiber modeling, which sounds very difficult and time consuming to accomplish. Luckily, MRAV has a contact in the ME department with a tool that can cater to our exact needs. (2) Another concern (also involving the sensors) was that the propellers might obstruct the viewing angle of the position sensors and give us false measurements. The other option would be to place the sensors on the outer most edges of the quad-rotor. The sensors, unfortunately, do NOT recognize any readings within a 6 inch range. With this in mind, placing the position sensors in the middle seems best. Testing will determine the obstruction issue, but a potential solution to that would be to raise the sensors higher.*

Bad Technical Detail Example:

- *Met with John and Brian to work on the website.*

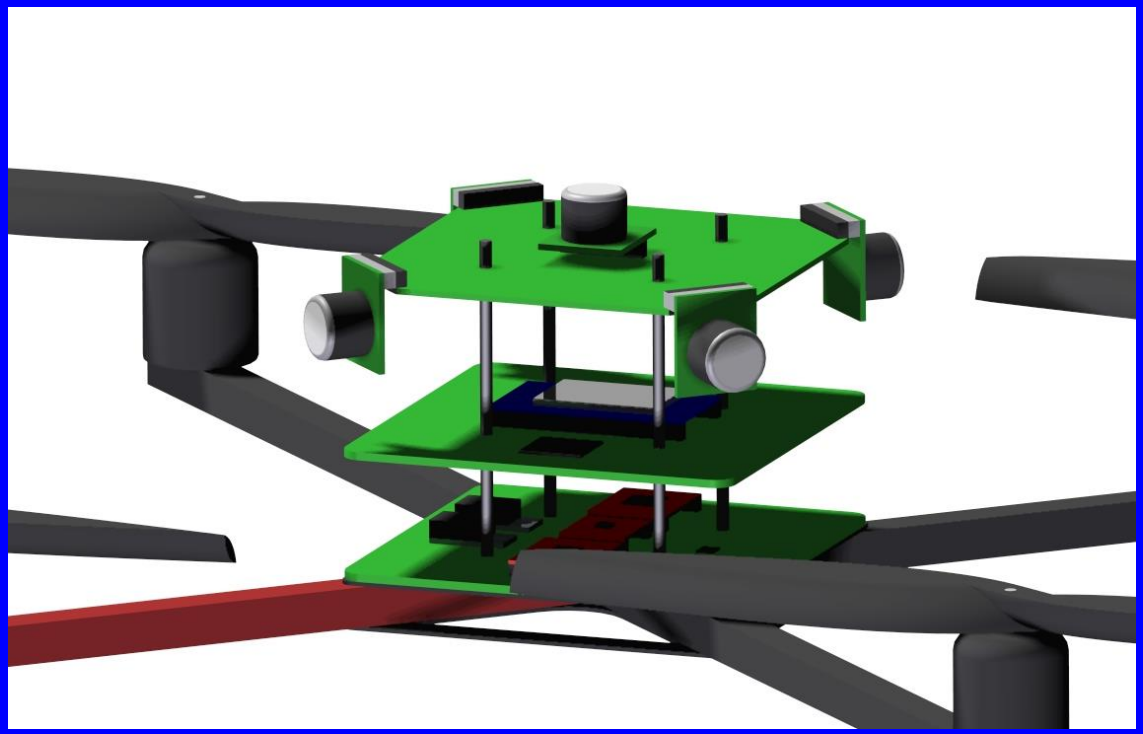
Pictures

- Provide a means of understanding what you're doing beyond text descriptions
- Worth ~1kword* apiece
- The more the better (at least 2-3 unique, relevant pictures per week)
- DO use a thumbnail that links to a larger picture (not just hyperlinks to pictures, please)
- DO use .jpg or .png image formats (no .tiff or .bmp, please)

*1kword = 1000 words, per marketing conventions. Sorry binary fans.

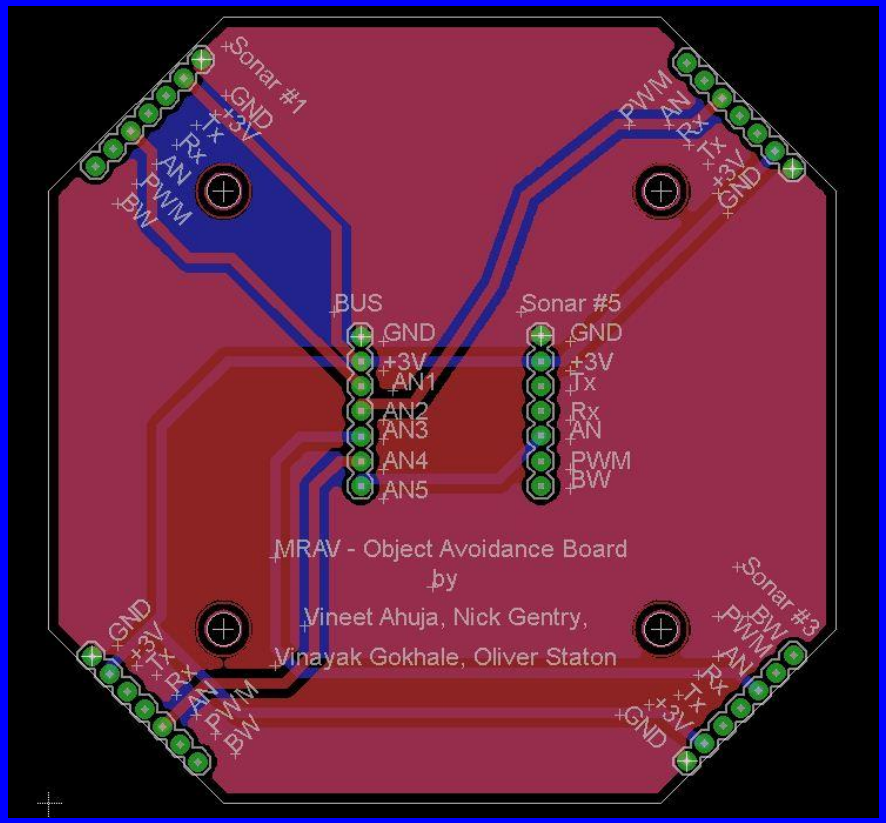
Examples of Relevant Pictures

CAD/3D Models:



Examples of Relevant Pictures

Schematics and PCB Layouts:



Examples of Relevant Pictures

Project Photos, Test Setups, Demos, etc.:

Examples of Relevant Pictures

- GUI Screenshots
- Program Flowcharts
- Program Function Call Diagrams
- Algorithm Illustrations
- Data structure Visualizations
- Computer Simulation Output
- Comparison Tables

Weekly Summaries

- Summarize your week's project progress in a concise, clear format (2-3 sentences)
- DO use 2-3 complete sentences
- DO talk about your project progess
- DON'T use short phrases or fragments
- DON'T talk about homework or non-project related tasks (such as working on the website, etc.)

Weekly Summaries

A Good Weekly Summary:

This week the majority of the PCB was completed. Due to routing considerations, the middle board layout was converted to a four-layered design. For routing reasons, the dimensions of the bottom and middle boards were increased.

A Bad Weekly Summary:

Completed packaging design (homework #4), progress on smartphone code.

Update Record

- Reflects steady, consistent progress towards project completion
- DO write entries “as events happen” (within 3 days of when event was written in lab)
- DO write entries regularly (every 3 days, or more often if there is progress to be reported)
- School holidays such as spring or fall break aren’t required for update record (though write ‘em if you got ‘em)
- Recommendation: jot down quick notes of what you do in lab to remind you later, then write in detail later

Writing Style

- Ability to adequately describe technical material
- DO use complete sentences (include subject; “Worked on code” is not a complete sentence)
- DO use correct grammar (nothing more annoy too grader then bad grammar)
- DO use correct spelling (consider using a spell check aware editor such as Notepad++ and then transferring those files to the team website)