

Class 10.2: Writing Project Recommendations

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<https://ah-ubc.appointlet.com/s/chat-mech328>

Available: Mon 9:00-10:45, 1:00-2:00; Wed 1:30-2:45

Agenda

- Review distinctions between conclusions & recommendations
- Classification exercise
- Recommendation expectations for project
- Writing exercise (project-related)



Journal Paper

- Introduction
- Methods
- Results
- Discussion
- Conclusions

Technical Report

- Introduction
- Methods
- Results
- Discussion
- Conclusions
- Recommendations

Conclusions vs Recommendations

- Conclusions
 - Respond to aims/questions that motivated the study
 - State the answers to those questions and/or direct inferences, backed by data/findings
 - Phrasing is ideally as quantitative as possible
 - Identify key limitations to generalizing
 - No NEW facts, ideas, statistics – all must show up earlier

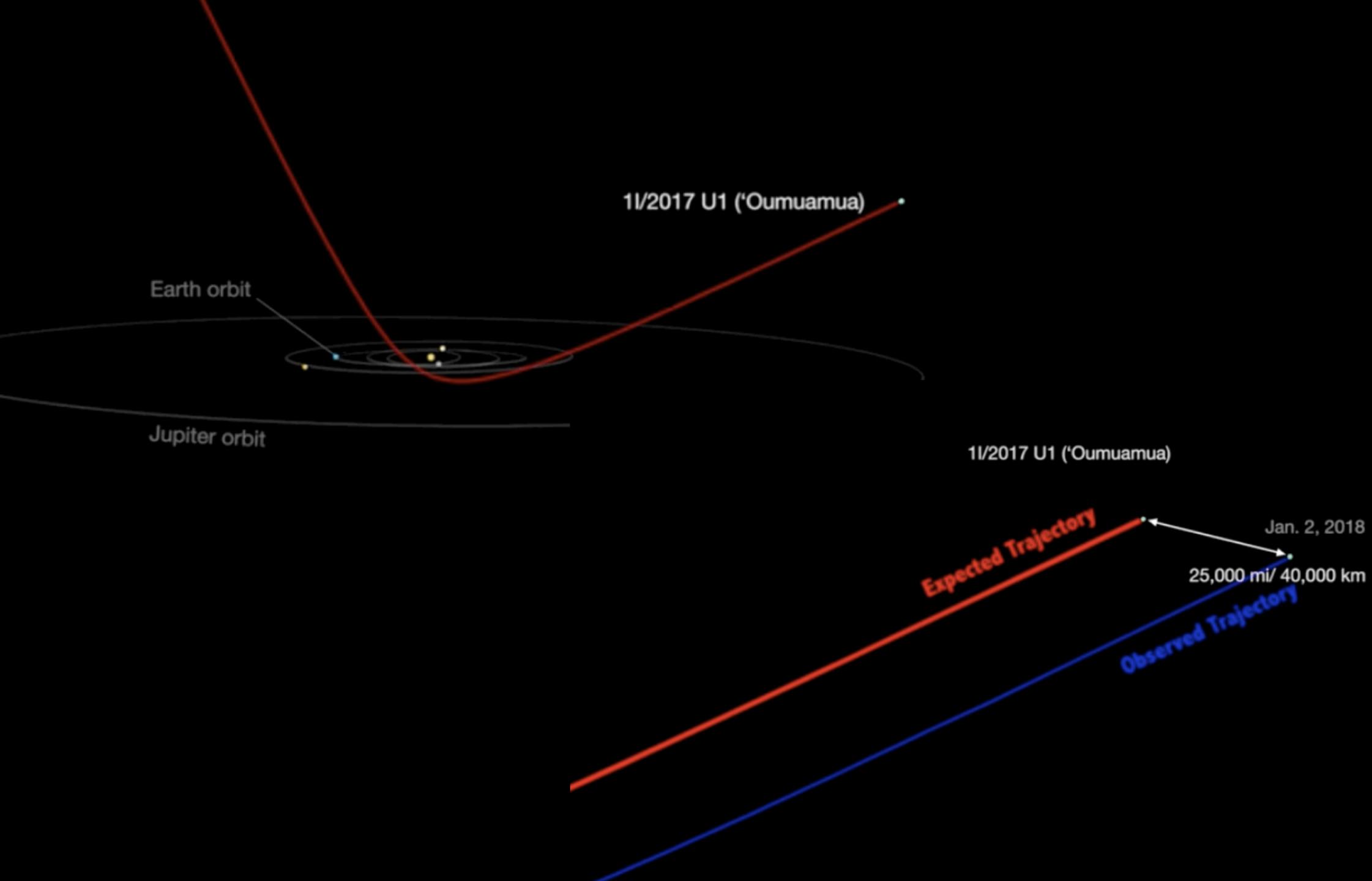
Conclusions vs Recommendations

- Recommendations
 - Advise the client what to do – often in a numbered list
 - Specific, actionable, expected outcome – not wishy-washy (think of doctor analogy)
 - Often uses the word “should”
 - Directly based on/linked to conclusions
 - Self-contained – reader shouldn’t have to consult body to understand what to do
 - It’s what you’re paid for!\$\$\$\$\$\$\$\$

Example:



Artist's Concep



Interesting Observations/Why Media Interest

- Deviation could be explained by solar radiation pressure if mass/area ratio is very small (0.1 g/cm^2)
- “What kind of object might have such a small mass-to-area ratio?”
- “‘Oumuamua [may] represent a new class of thin interstellar material, either produced naturally, through a yet unknown process in the ISM or in proto-planetary disks, or of an artificial origin.’
 - “one possibility is that ‘Oumuamua is a lightsail, floating in interstellar space as a debris from an advanced technological equipment”
 - “a more exotic scenario is that ‘Oumuamua may be a fully operational probe sent *intentionally* to Earth vicinity by an alien civilization”

Which is Which? Conclusion vs Recommendation

1. “the observed non-gravitational acceleration of ‘Oumuamua, may be explained by Solar radiation pressure”
2. “If radiation pressure is the accelerating force, then ‘Oumuamua represents a new class of thin interstellar material”
3. “A survey for lightsails as technosignatures in the Solar System is warranted, irrespective of whether ‘Oumuamua is one of them.”
4. “Since it is too late to image ‘Oumuamua with existing telescopes or chase it with chemical rockets, its likely origin and mechanical properties could only be deciphered by searching for other objects of its type in the future.”

Another Classification Exercise

- Using Mentimeter

Conclusions vs Recommendations - Mentimeter

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MECH 328 Project Writeup Instructions

- xvi. Provide a section titled “Conclusions” and draw conclusions based on the work you presented.
- xvii. Provide a section titled “Recommendations” and give a *numbered set* of specific recommendations on the next steps that the client should pursue to, e.g., bring the design to reality by building on your work.
- In some cases, your recommendation may be to make drastic changes, which could include abandoning the project. Your recommendations should identify steps that are in the best interests of the client.
- Your recommendations should also reference your list of all the requirements and indicate how each major requirement is to be met, as well as reference any appendices indicating outstanding safety issues that remain to be addressed.

Recommendations in Presentations

- To Client:
 - Present the recommendations clearly and with conviction.
 - If you recommend proceeding with developing your designs, showcase the designs, briefly describe how they work, and show how the features incorporated in your design satisfy the needs.
 - If you recommend not proceeding, explain to the client why this is the case.
- To Senior Engineers:
 - Remaining work: Discuss which aspects of the proposed design are least well determined, outline the risks involved, and explain your recommendations regarding these aspects.
- Q&A:
 - Be prepared to have your justification scrutinized. Have your concept development, selection, detail design and other work supporting your final recommendations at hand so that you can answer questions during Q&A.

Report Exercise

- Write out one conclusion and one recommendation tied to that conclusion
- Post at tinyurl.com/MECH328REC

Conclusions vs Recommendations

tinyurl.com/MECH328REC

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References

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- IEEE Guide to Writing in the Engineering and Technical Fields, Hatcher, M, Wiley-IEEE Press, 2017
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