Introduction to Research

(2) Honor Code and Research Environment

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Overview

- Yale [honor code](#)
  - Minimum standard for code of conduct in research labs
- A **professional**, **friendly**, and **productive** environment is crucial to research and academic success
- As advisor, my role here is to help you be successful in your research and future careers
  - Requires frequent communication to ensure that I'm helpful!
  - Honest, direct feedback
  - Be polite

Honor Code

- Yale [honor code](#)
  - Minimum standard for code of conduct in research labs

- In research, extra effort is needed to ensure integrity
  - **Reproducibility**: ensure that the results can be reproduced by fellow researchers
    - Record run configurations; use autoML tools
    - Detail hyper-parameters and design space in paper (appendix)
    - Good coding style and use clear APIs (more on engineering practices in Session 4)
  - **Give credits**: always acknowledge opinions / ideas / contributions from other people

Research Environment

- Use **commonsense** (within and outside the lab)
  - If there is anything that you feel uncomfortable, please reach out to me individually
  - Pay attention to the use of language
  - Feedbacks and discussions should be focused on the work itself, instead of the person
- **Do not rush papers**!
  - Research impact is mostly measured by your "max", not "sum"
  - Think thoroughly on what might be an issue for readers / reviewers
  - Submission should have method and experiment sections ready **2 weeks** before the deadline

Group Meetings

- We'll hold group meetings every week for 1 hour
  - One of us will present his / her research
    - **Brainstorm**: ideas; preliminary results
    - **Presentation**: research paper (very important preparation if you will present it in public)
  - Sometimes we will also invite external speakers to give talks
  - The speaker should **lead** the meeting
- It's very important to be active and give **feedbacks**
  - Give feedbacks to the presenter
  - Ask questions, provide suggestions
  - Be helpful, and do not be shy

1:1 Meetings (1)

- We schedule a fixed 30 minute 1:1 meeting every week
  - Possible to schedule more when needed
- Research progress
  - Be **organized and prepared !!**
  - Use a **tool** (e.g. Google Docs, Github Project) to track your progress
    - Are all concerns / questions / suggestions from previous meetings addressed?
    - What's new? Visualizations are very useful for effective communication
    - What are the difficulties / questions / challenges to discuss?
    - Meeting notes
    - What are the TODOs
  - It's OK to disagree
  - Learn from past mistakes – **we don't talk about repeated issues**

1:1 Meetings (2)

- 1:1 meeting is a good way to discuss your personal growths in a **confidential** way
  - Internship, research, career plans
  - Difficulties, frustrations
  - Concerns
  - Provide honest feedback for me
- I will also be very straight-forward in providing you with feedbacks
  - Ensure you are on track

Ad hoc Meetings

- We will schedule meetings (could involve one or more of you) for **projects, collaborations**

- One of the participants should keep a meeting notes so we could refer to what was discussed

- Schedule ad hoc meetings when there are blockers
  - Unblock **ASAP**
  - Do not wait until next week 1:1 meeting to tell me that you are blocked
  - Use Slack communication to determine if meeting or help is needed

Handle Stress

- **Research has a lot of uncertainties**
  - Make small adjustment to the direction is more effective than a complete switch of direction
  - Learn from recent papers
  - Again, **less is more**
  - There's no need to feel stressed if you publish less but produce great works!
- **It's ok to take time off**
  - I'm ok for you to have a few weeks of vacations, but please let me know at least 2 weeks beforehand
  - But have a plan on your PhD timeline

Work Schedule

- **Be reasonable**; create a schedule that is sustainable
  - Don't over-work
  - But also, don't let your research idle for way too long (e.g. find research-related projects or internships during summer!)
- **Weekends** should be weekends
  - There could be exceptions made for deadlines
  - **Planning ahead and avoiding procrastination** can help avoiding such situation!
- **Communication**
  - I might email or message during weekends, but there is no obligation for you to respond, and vice versa
  - But please try to be **responsive** during work time (unless you are in meetings / classes)

Research Direction

- Be open-minded
  - **Read papers and listen to talks** on a diverse set of topics
  - Pick ones that are most interesting to you
  - Be an **integral** part of the lab research

- Sometimes, you are funded by a particular **research grant**
  - Required to spend time on the designated research field
  - When applying for grant, we make sure that it fits the research direction

- When you are more senior in research:
  - Start connecting the "dots" (papers) to form a **coherent research path**
  - This is your **thesis**!

Example Timeline (1)

- Year 1: **Exploratory publications**

- Year 2: **General plan on research focus**
  - Create impact: libraries, benchmarks, surveys
  - Internship
  - Research results in your research focus

- Year 3: **Qual**
  - Major publication on your research focus
  - Collaborations and applications to demonstrate impact of your work

Have your individual plan, keeping in mind what you ultimately aim for

Example Timeline (2)

- Year 4: **Thesis proposal**
  - Connect the "dots"
  - Identify missing pieces and complete them
  - Develop research mentorship, workshop organization and other useful skills

- Year 5: **Defense (oral)**
  - Dissertation writing
  - Job applications, interviews
  - Tackle major collaboration projects

The plan can be adjusted, but it should maintain a high standard

Summary

- Impact is a multi-dimensional goal
  - **Research**: publications, conference presentations, workshops, tutorials, talks
  - **Teaching**: TA, mentoring, reading groups
  - **Tool-building**: high-quality code, libraries, benchmarks, competitions
- Communication is crucial

- Be **proactive**!!

- **I do NOT like to repeat things.** So please refer to the series of slides and remember them. It's very easy to follow once you have the habit of doing great research
- If you are unsure about anything in this series, please reach out to me since I'm here to help you