Lab Manual

Human-Centered AI Lab

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1 Welcome

It looks like you have recently joined the Human-Centered AI Lab at Helmholtz Munich.

That is great! We are really excited to have you as a part of our team and we will do what we can to make sure that you have a great time in our lab. We hope you will learn a lot about cognitive science, human and machine learning, develop new and useful skills (coding, data analysis, writing papers, giving talks), make new friends, and have a great deal of fun throughout the whole process. We are in this together and we are here to support you!

This lab manual was inspired by several others, but –most importantly– it copies many sections from the great manual written by Mariam Aly. It is also a work-in-progress. If you have ideas about things to add, or what to clarify, talk to Eric or any other member of the lab and we will sort this out. It is supposed to provide context and general guidelines. For specific and technical questions, please consult the Lab Wiki.

2 Diversity statement

In our lab, we aim to foster an environment where members of our community want to work, learn, teach, research, interact, develop professionally, and explore new ideas. We value persons of all identities, including dimensions such as age, culture, national origin, ability, ethnicity, sex and gender identity, language, race, religion, sexual orientation, socioeconomic status, and others. As scientists, we understand that diverse groups bring diverse perspectives; this diversity produces better outcomes in a variety of contexts, including learning and decision making, and our ability to work with one another. Consistent with these values, our lab actively seeks opportunities to increase diversity.

3 Expectations and responsibilities

3.1 Everyone

Science can be incredibly fun and rewarding; science can also feel challenging and lonely at times. In order to maximize the positive parts and to mitigate the negative parts, we want to make sure that everyone experiences a positive, engaging, hostility-free, supportive, and rewarding lab environment. To maintain that environment, all of us have to contribute.

In particular, we all have to:

- Work on what we are passionate about, work hard at it, and be proud of it.

- Work on our projects carefully. We do not rush our work. We rather publish 1 great article than 4 mediocre ones. We think about our work. We implement models and experiments carefully. We double and triple check our code. We incorporate sanity checks and ask others to look at our code or data.

- Accept mistakes. In fact, mistakes are normal and part of our lives as scientists. We welcome mistakes, because this means that we have learned something. We tell our collaborators immediately if we have found a mistake in our work, no matter the stage of the project, we fix the mistake together, and we move on.

- Be honest! We all want to get papers published, be respected, and do great things. But we do this honestly. It is never okay to plagiarize, tamper with, make up or omit data, or alter results in any way. We are scientists and we are interested in the truth. Null results and unexpected results are important; in fact, unexpected findings are likely to lead to novel theories. We ask a question and nature provides an answer. This cannot be emphasized enough: we want the truth and academic misconduct will not be tolerated!

- Support each other. We help each other if other lab members need support (even if we are not part of the project). Science is collaborative, not competitive.

- Cheer for each other. The reward signal in science is sparse and rejections are frequent. That is why we always give positive and helpful feedback when it is due. If we like someone's work, we let them know!

- Let someone know if you are struggling. Health and happiness always come first. The lab looks out for the well-being of all its members. We are here to help. It is normal to go through hard patches (we all do), but we should not feel shy about asking for help.

- Report misbehavior. If there is any tension or hostility in the lab, something has to be done about it. We cannot thrive in an environment we are not comfortable in, and disrespect or rudeness will not be tolerated in our lab. If you do not feel comfortable confronting the person in question, speak to Eric. If you have a problem with Eric and are comfortable telling him about it, please do! If you are not comfortable, then tell another member of the institute.

- Stay up-to-date on the latest research. We share interesting papers and talk to researchers outside of the lab. If you think you have an idea, let others know about it! We are not ashamed of our ideas and try develop our lab together by discussing our thoughts openly.

3.2 Smaller day-to-day things

There are also a few rules to make our daily life in the lab run smoothly:

- If you are ill, stay at home and take care of yourself - for your own and your coworkers' sake. If you cannot come in, reschedule your meetings for the day (or the next couple of days) as soon as possible.

- You are not expected to come into the lab on weekends and holidays, and you are not expected to stay late at night. You are expected to get your work done at whatever time of the day you like to do it.

- Show up to your personal meetings and to the lab meetings. You do not have to be in at 9am every day, just show up for your commitments, and work the hours you need to work to get things done.

- Regular presence at the institute is expected. However, if you want to work from home every now and then this should not be a problem. If you want to work from home more regularly please talk to Eric.

- Every employee at Helmholtz Munich has a certain amount of vacation days. If you want to take some days off, please fill out a vacation form some weeks in advance. You need to let Eric sign it before handing it in.

- Unfortunately we can't lock the doors to our offices. However, make sure the door to your office is closed if no one is inside. Turn off the lights if you are the last one leaving for the day. Act environmentally friendly in general.

- Keep the lab tidy. Eating in lab is fine, but clean up food waste, crumbs, spills. Put lab equipment back to where you found it. Keep common areas uncluttered.

- Be on time: Respect that others have packed days and everyone's time is valuable. Try to be 2 minutes early for your meetings with Eric.

- Interact with other researchers at the institute. Go to departmental colloquiums and talk to other researchers and groups. We enjoy talking about research and hearing about different ideas.

3.3 Eric

Everything from Section 2.1 and 2.2, and I also promise to:

- Support you scientifically, emotionally, and financially.

- Give you detailed, honest and fair feedback on a timely basis, including feedback on project ideas, conference posters, talks, manuscripts, figures, and grant proposals.

- Be available in person, on slack and via e-mail whenever possible, including regular meetings to discuss your research (and anything else you would like to discuss).

- Give my perspective on where the lab is going, where the field is going, and tips about thriving in academia. Share my experience with you.

- Support your career development by introducing you to other researchers in the field, promoting your work at talks, writing recommendation letters for you, and letting you attend conferences as often as possible.

- Help you prepare for the next step of your career, whether it is a post-doc, a faculty job, or a job outside of academia.

- Care for your emotional and physical well-being, and prioritize that above all else.

3.4   Postdocs

Everything from Section 2.1 and 2.2, and you will also be expected to:

- Develop your own independent line of research.

- Help train and mentor students in the lab.

- Present your work at departmental events, at other labs, and at conferences.

- Apply for grants. It is in your best interest to get experience writing grants; if you get them, this helps the entire lab and will make you more independent and attractive on the job market.

- Apply for jobs (academic or otherwise) once you are ready, but no later than at the beginning of your 3rd year of postdoc. Think about the following software development mantra: "if you think you're ready, it's too late!". If you want to leave academia, that is totally fine. You should still treat your postdoc seriously though and talk to Eric and others about how to best train for jobs outside academia.

- Challenge Eric whenever you think he is wrong or when your opinion is different.

- Add your own expertise and perspective to the lab. Leave a mark!

3.5   PhD students

Everything from Section 2.1 and 2.2, and you will also be expected to:

- Develop your dissertation research. Your dissertation should contain at least three substantial projects that answer a big-picture question that you have. Much of your work has to be done independently, but remember that others in the lab (especially Eric!) are there to help you.

- Help mentor master or undergraduate students in the lab.

- Present your work at departmental events, at other labs, and at conferences.

- Think about what you want for your career (academia, industry, or something else), and talk to Eric about it to make sure you are getting the training you need. Remember that you should start thinking about your next steps at least one year before your PhD ends.

- Educate yourself both independently and by taking departmental courses or attending university lectures.

- Make sure you meet all departmental deadlines (e.g., for your exams and thesis); make sure Eric is aware of them!

- Develop your own expertise and treat the lab to your opinion.

3.6 Research Assistants, Interns and Master students

Everything from Section 2.1 and 2.2, and you will also be expected to:

- If you are working on your own project, then you should do that. Otherwise, you can assist other lab members with data collection and analysis.

- Make sure you know who is mentoring you and seek out help whenever necessary.

- Develop your weekly schedule by talking to your mentor. You should be coming in every week, and scheduling enough time to get your work done.

- Attend and actively participate in our lab meetings.

- Find out what kind of research you like and share your ideas with us.

4 Code of Conduct

4.1 Essential Policies

The lab is an environment that must be free of harassment and discrimination. All lab members are expected to abide by the Helmholtz Munich policies on discrimination and harassment. The lab is committed to ensuring a safe, friendly, and accepting environment for everybody. We will not tolerate any verbal or physical harassment or discrimination on the basis of gender, gender identity and expression, sexual orientation, disability, physical appearance, body size, race, or religion. We will not tolerate intimidation, stalking, following, sustained disruption of talks or other events, inappropriate physical contact, and unwelcome sexual attention. Finally, it should go without saying that lewd language and behavior have no place in our lab, including any lab outings. If you notice someone being harassed, or are harassed yourself, tell Eric immediately. If Eric is the cause of your concern, then reach out to another trusted member of the institute.

4.2 Scientific Integrity

4.2.1 Misconduct

The lab is committed to ensuring research integrity, and we take a hard line on research misconduct. We will not tolerate fabrication, falsification, or plagiarism. A big problem is why people feel the need to engage in misconduct in the first place, and that's a discussion that we can have. If you are feeling pressured to succeed (publish a lot, publish in high impact journals), you should reach out to Eric and we can talk about it – but this pressure is something we all face and is never an excuse to fabricate, falsify, or plagiarize. Also, think about the goal of science and why you are here: you are here to arrive at the truth, to get as close as we can to facts about cognition, the brain and behavior. Not only is research misconduct doing you a disservice, it is also a disservice to the field. And it risks your entire career. It is never right and never worth it. Don't do it!

4.2.2 Reproducible research

If you gave someone else your raw data, they should be able to reproduce your results exactly. This is critical, because if they cannot reproduce your results, it suggests that one (or both) of you has made errors in their analysis, and the results cannot be trusted. Reproducible research is an essential part of science, and an expectation for all projects in the lab. For results to be reproducible, the analysis pipeline must be organized and well documented. To meet these goals, you should take extensive notes on each step of your analysis pipeline. This means writing down how you did things every step of the way (and the order that you did things), from any pre-processing of the data, to running models, to statistical tests. It is also worth mentioning that you should take detailed notes on your experimental design as well. Additionally, your code should also be commented clearly. We all know what it is like to sit down, quickly write a bunch of code to run an analysis without taking time to comment it, and then having no idea what we did a few months down the road. Comment your code so that every step is understandable by an outsider. Finally, it is highly encouraged that you use some form of version control[1] in order to keep track of what code changes you made and when you made them, as well as sharing code with others.

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[1]e.g., `git` in combination with `GitHub`

4.3 Authorship

Like other labs, we will follow the APA guidelines with respect to authorship:

> "Authorship credit should reflect the individual's contribution to the study. An author is considered anyone involved with initial research design, data collection and analysis, manuscript drafting, and final approval. However, the following do not necessarily qualify for authorship: providing funding or resources, mentorship, or contributing research but not helping with the publication itself. The primary author assumes responsibility for the publication, making sure that the data are accurate, that all deserving authors have been credited, that all authors have given their approval to the final draft; and handles responses to inquiries after the manuscript is published."

At the start of a new project, the student or post-doc taking on the lead role can expect to be first author (talk to Eric about it if you are not sure). Eric will typically be the last author, unless the project is primarily under the guidance of another PI and Eric is only involved as a secondary PI – then Eric will be second to last and the main PI will be last. Students and post-docs who help over the course of the project may be added to the author list depending on their contribution, and their placement will be discussed with all parties involved in the paper. If a student or post-doc takes on a project but subsequently hands it off to another student or postdoc, they will most likely lose first-authorship to that student or post-doc, unless co-first-authorship is appropriate. All of these issues will be discussed openly, and you should feel free to bring them up if you are not sure of your authorship status or want to challenge it.

4.4 Old projects

If a student or post-doc collects a data set but does not completely analyze it or write it up within 2 years after the end of data collection, Eric will re-assign the project (if appropriate) to another person to expedite publication. If a student or post-doc voluntarily relinquishes their rights to the project prior to the 2-year window, Eric will also re-assign the project to another individual. This policy is here to prevent data (especially expensive data) from remaining unpublished, but is meant to give priority to the person who collected the data initially.

4.5 Human Subjects Research

Adherence to approved ethics protocols is essential, and non-adherence can lead to severe consequences for the entire lab (i.e., we may lose permission to run any research on human participants). All lab members must read and comply with the ethics consent form and research summary for any project that they are working on. If there is no ethics approval, we cannot run participants, look at the data, analyze the data, or be in any way involved in a project. Make sure to think early enough about applying for an ethics protocol if you want to run a study with human subjects. The approval for the protocol can take up to several months so an early application will keep you from loosing time.

5 Meetings

5.1 Meeting Eric

Every full-time member of the lab will have a weekly slot to meet with Eric in his office. These meetings will normally be scheduled for about one 45 minutes and can be used to discuss ongoing projects or whatever you would like to discuss. If you are a new member joining the lab, then we will set a schedule for our weekly meetings during your first days at our lab. If scheduling conflicts arise (e.g., because of travel), we can try to reschedule for another day that week. If there is nothing to discuss, you should still drop by for a brief chat.
In addition to weekly meetings, and occasionally dropping by the lab, you can find Eric in his office. His door is almost always open; if it is, feel free to ask for a chat. He will always say yes, though sometimes he can only spare a couple of minutes or might ask you to let him finish typing a sentence.
Every six months, a general feedback meeting between you and Eric should be scheduled. In these meetings, you and Eric both have the opportunity to talk about the progress of the last six months, provide feedback about your perceived strengths and weaknesses, and set goals for the next six months.

5.2   Lab meetings

Weekly lab meetings happen on Tuesday at 11:00 am. Lab meetings are approximately 1 hour long and meant to be a forum for trainees to present project ideas and/or data to get feedback from the rest of the group. Projects at any level of completion (or even not yet started!) can benefit from being presented. Typically, for the slots at the end of the cycle, we invite external speakers.

Each trainee (RA, students, post-docs) is expected to present at least once every semester. These meetings are informal, and there are multiple options what you can do with your slot. They are ordered by priority ranking.

1. You can present on your current and future work to get feedback, present results, pitch ideas, etc.

2. You can present 2-3 papers that are connected to your ongoing/future work to discuss the state of the art for the project you're currently working on.

3. You can present your past work from before joining our lab so we can get to know you and your previous research.

Of course, there is no clear cut between the different topics and a mix of them is also possible. If you are unsure about what to present, do not hesitate to ask Eric or the group in general for feedback.

Lab members are also expected to attend every meeting[2]. Undergraduate students are encouraged to attend as often as possible (assuming it fits in their course schedule).

5.3   Group meetings

After the lab meeting slot, we usually stay for at most until 12:00 am to discuss organizational matters. Eric usually starts group meetings by giving weekly updates, and you are encouraged to draw attention to organizational topics that might concern most lab members.

5.4   Journal Club

Biweekly journal club meetings happen on Monday at 4:00 pm and everyone is encouraged to attend! The purpose of this journal club is to encourage the reading of papers that cover the wide variety of interests in the lab. In the current version, one person hosts the session, but everyone is expected to read the paper to facilitate discussion.

6   Deadlines

One way of maintaining sanity in the academic world is to be as organized as possible. This is essential because disorganization does not just hurt you, it hurts your collaborators and people whose help you need. When it comes to deadlines, tell your collaborators as soon as you know when a deadline is, and make sure they are aware of it the closer it gets. Do not be afraid to bug them about it (yes, bug Eric as well).

- Give Eric at least one week's notice to do something with a hard deadline that does not require a lot of time (e.g., reading/commenting on conference abstracts, filling out paperwork, etc.).

- Give Eric at least two weeks' notice (preferably more) to do something with a hard deadline that requires a moderate amount of time (e.g., a letter of recommendation).

- If you want feedback on research and teaching statements, or other work that requires multiple back-and-forth interactions between you and Eric before a hard deadline, give him as much time as you can; at the very least three weeks. For manuscript submissions and revisions (i.e., which either have no deadline at all or only a weak deadline), send drafts to Eric as soon as you have them, and bug him to give you feedback if he has not responded in two weeks – papers are important!

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[2]Obviously, illnesses, doctor appointments, family issues, etc. are a valid reason for missing a meeting.

7 Resources

7.1 Lab Wiki

Our shared Lab Documentation can be accessed here: https://github.com/candemircan/CPI-Wiki/
For specific and practical questions (like *"How can I use the local computing cluster?"*), please first check the wiki. If you cannot find the requested information, ask other lab members. If you realize that some part of the wiki needs an update or an additional entry, please submit a push-request. Your colleagues will thank you.

7.2 Website

You will be asked to add your picture and CV to our lab website: https://hcai-munich.com/
Ask Eric or other members of the lab about how to get access to our github account, which will enable you to change our website.

7.3 Github

Our shared `GitHub` account can be found at: https://github.com/cpilab/
Ask Eric or other members of the lab about how to get access to our account.

7.4 Slack

Intra-lab communications are normally made easier by using `slack`: https://comprinint.slack.com/
Ask Eric to get access before you join.

7.5 Calendar

Here's a link to Eric's public `Google calendar`: https://tinyurl.com/y8dbtt42/
You should use the calendar before you ask him about open time slots to meet, see when different talks or meetings are happening, as well as when he's out-of-town.

8 Lab traditions

8.1 Cake

Every time something good has happened to you, i.e. you have submitted a paper, won a prize, are leaving the lab, or it is your birthday, you are kindly asked to provide cake for everyone to celebrate. Every time a new member joins the lab, Eric organizes cake.

8.2 Retreats

There will be annual lab retreats, where the whole lab takes a trip to a to-be-discussed location and bonds over science, hiking, and board games.

8.3 Other events

We might also schedule other lab events. However, it is important that all lab members feel included and can join these events.