IC Quick Guide to Research Projects

These general guidelines do not replace the research project instructions provided by the lab and/or your project supervisor, which take precedence. ***Students are responsible for ensuring that they follow the correct guidelines.***

The goal of the research projects is for you to learn the research process and contribute to the lab's research by applying that process. This includes (1) gaining in-depth knowledge, (2) trying out new ideas, and (3) communicating your results. Each project is supervised by a supervisor (often a PhD student or a post-doc in the lab) who will be clearly identified at the beginning of the project. The role of the supervisor is to help you by following the progress of your project work and making sure you do not get stuck on particular aspects of the topic by giving you advice and directions. During the semester, you should take ownership of your project and manage your time independently. You are encouraged to see your supervisor on a weekly basis.

Projects will be graded based on your work during the semester, your results such as code and interesting ideas, your report, and your presentation. Your report should concisely and clearly present the context, the problem, and the solution.

Choosing a subject

Finding a suitable project is not an easy task. It is mostly a matter of knowing what the project requires and whether your background fulfills them.

Steps

- You must start looking for your project toward the end of the previous semester or during the break between the two semesters.
- Some labs have a web page dedicated to offering projects, others prefer to respond on a case-by-case basis.
- If you have other ideas or interests, feel free to contact a lab of your choice to discuss possibilities for a tailor-made topic. This makes sense, for example, if you have attended a course, and there was a topic that you really liked and wanted to study in more detail.

Please keep in mind that professors do not always have enough staff to provide supervision, so sometimes they cannot offer you a project.

Organization and supervision

Each project is supervised by a supervisor who is clearly identified at the beginning of the project. The role of your supervisor is to guide you through your project: give possible directions,

suggest ways out of dead ends, etc. But you should be the main driving force behind your project, and the actual work must be done by you. The process of doing independent work is an indispensable part of any project.

You should submit a detailed project schedule to your supervisor by the end of week 2 after the project assignment. Define the deadlines and milestones. Learning to estimate how much time a task takes and to manage expectations is a fundamental part of any project.

You should regularly update your supervisor on the progress of your project to stay on track and to avoid any misunderstandings. Different update strategies can be agreed directly between yourself and your supervisor at the beginning of the project (e.g., weekly meeting, progress report, short presentations, etc.).

Whenever you feel that your project is not progressing as desired or you encounter obstacles, contact your supervisor immediately and ask them for support. They will do their best to react as quickly as possible. If you think it is necessary to adjust the project (which is quite possible), you should discuss these changes with your supervisor.

Meetings

You should meet regularly with your supervisor to discuss current problems and your ideas. Prepare these meetings so that you can show your progress. Ideally, send your weekly report to your supervisor a few days before the meeting so that she or he can prepare as well. Take notes during the meeting and email a summary of what was discussed, and decisions made to your supervisor. This way, misunderstandings can be largely avoided.

Project report

The process and results of every project should be summarized in a report. Your project report should be a summary for everyone, including the lab and future project students, to know what you did, why you did it that way, how you did it, and what interesting discoveries you made.

An example of what your report could contain:

1. an introduction to the problem, summarizing any necessary background material,
2. a description of your design, explaining how it helps solve the problem as well as any design choices you made,
3. a description of your implementation,
4. an evaluation, including any benchmark results,
5. a discussion of the results, including interesting insights you gained and how you think your result could be extended or improved in the future, and
6. a list of the references you used in the rest of the report.

You may use a word processing program of your choice, but you are strongly encouraged to use LaTeX. Be as brief as you feel is appropriate, and do not pad the report with filler text to meet a

specific page count. Your supervisors would rather read a short and concise report than a long and repetitive report that has the same content.

Citing information sources

You should be very vigilant when referring to the work of other people. All work that is not yours must be properly cited (including the source code for software). If you are not sure about how to cite a work, ask your supervisor. We recommend you also read the Directive concerning the citing and referencing of sources of information in written work submitted by students (LEX 1.3.3).

Presentation

If you feel insecure giving presentations or if you are not sure what to put on your slides you can either find many good tutorials on the web, or you can ask your supervisor. As an example, your presentation can cover the following:

- Problem statement and motivation (why do you care about the problem? why is it important? what did others do?)
- Your approach (what is your approach to solve the problem, preliminary/results: experiments, or proofs)
- Future work and implications

Do not hesitate to ask your supervisor if you have any questions about what to include in your talk. Especially, it could be a good idea to send her or him a draft of your slides a bit ahead of the presentation date. You should try to stick to the allotted time of the talk.

If the project is shared between several students, then they should all commit to play an equal part in the oral presentation.

Some guidelines for presentations

If you are a beginner, some main points to keep in mind are:

- Length: Fewer slides and more talking is the way to go. Have fewer slides than the length of your talk in minutes or say around 2/3rd of the total length in minutes.
- It is not possible to explain all aspects of your work in a short talk. Try to use your time to clearly explain the main parts of your work.
- Stick to the time limit. Practice and time your talk before the actual presentation.
- Try to have a dry run of your talk and incorporate suggestions from your audience.
- For presenting comfort, try to use a laser pointer and a remote slide changer.
- Try to arrive before the talk and test your laptop with the projector to make sure that the display settings are matched to that of the projector. This way you can avoid wasting valuable talking time.

Evaluation and grading

The grading scale at EPFL ranges from 1.0 to 6.0 in quarter grade (0.25) steps. The pass grade is 4.0, the maximum grade is 6.0.

Your final grade will be compiled based on the achievements during your project, the challenges that you have taken on your own, the quality of your documentation and the style of your work (your motivation, your creativity, your enthusiasm).

It is recommended that the specific marking scheme should be obtained from the project supervisor prior to beginning the project.

Useful links

- How to read a paper
- How to write a great research paper
- Small guide to giving presentations
- EPFL Library citation and copyright guidelines

Some additional resources on LaTeX

- https://github.com/HexHive/thesis_template - a possible EPFL thesis template. You are not required to use any template, but feel free to use/adapt it if you find it useful.
- https://github.com/luong-komorebi/Begin-Latex-in-minutes - getting started with LaTeX.
- https://latex-tutorial.com/ - detailed tutorial on LaTeX.