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# Course introduction

1st phase – Topics and meetings

2nd phase – Presentation by students; be active, ask provoking questions, will be made in a group of 2 (maybe 3, exceptionally 1). Also, a final project, giving a circa 10-page essay.

Immagine che contiene testo, schermata, Carattere

Descrizione generata automaticamente

The themes can be proposed by the group or selected via a list of proposals by SPRITZ members (there will be a presentation during early December).

# How papers are made and carry out research

There is a methodology in doing research, just like the scientific method (make observations, form hypotheses, experiment, analyze, report and reproduce results). In our case, it’s reading papers, attending talks, thinking and discussing (not falling into the *survivorship bias*, so focusing on some parts of the process thinking we’re collecting the right data, when actually we’re not, to analyze a particular phenomenon). Also, we make patents to create original ideas, and something not seen before (these are considered factual for the most part).

When we’re doing research, we’re at the edge of the knowledge, when we’re consolidating facts and things nobody knows to build new knowledge and facts. We’re not alone in this, it’s made by the community and other researchers as well, consolidating a clear understanding of themes.

Papers usually range from 6/10 pages up to 30, made on the outside by:

* a title
* list of authors (affiliations)
* abstract to give the general idea and context
  + give the good idea to the right people, to try to invest further into your text (keep it short)
* introduction on the problem and its history, the motivation behind and the scientific motivations about the work and the contributions
* a section about related work, comparing what’s already there with our works, highlighting what our work does more than others

Inside instead, we structure like:

* description of the proposal, giving background knowledge, a formal definition of the problem and its method and the overall components
* experimental evaluation, implanting the experimenting and describing the tools used, presenting results and discussing limitations (supporting claims validly)
* conclusions, summarizing contributions and future research conclusions

The *review process* is made by picking a venue of evaluation to other scientists (journal/conference) keeping an eye to the deadline submission.

The venues can either be:

* scientifical journals, places established for several years, where there is a board of experts responsible of evaluating papers (chief/associate editors/reviewers)
* conferences, mostly one shot in a specifical place (many chairs like conference, submission, publicity chairs, etc./program committee members/reviewers)
  + it’s important to understand the quality of the conferences, looking into rankings
  + useful link: <https://people.engr.tamu.edu/guofei/sec_conf_stat.htm>

The chairs are responsible for the reviews and very few are accepted. We disclose information ethically, presenting good for a career’s sake but also having a good paper. To read papers, good places are IEEE Xplore, ACM Digital Library, Google Scholar, dblp, Springer Link, etc.

To assess a paper, it’s important to read it, analyzing the person impact, the author reputation, citations (more advanced: assessing researchers, looking for citing, h-index [used to quote the impact of a paper and uses as the index of number of citations by other authors at least that same number of times. For instance, an h-index of means that the scientist has published at least papers that have each been cited at least ] and more).

Also, one can look for the citation graph that describes the citations within a collection of documents, linking all the citation in between and see how problems were linked and solved.