

Tips for your Graduate School Research

AISTATS 2022 - Mentoring Retrospectives

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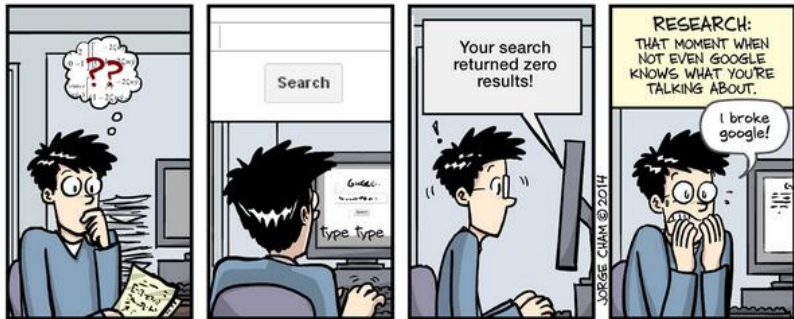
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What is Research?



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What is Mentoring?

From Wikipedia *Mentorship*:

*Mentoring is a process for the **informal transmission of knowledge, social capital, and the psychosocial support** perceived by the recipient as relevant to work, career, or professional development*

*Mentoring entails informal communication, usually face-to-face and during a **sustained period of time**, between a person who is perceived to have greater relevant knowledge, wisdom, or experience (the mentor) and a person who is perceived to have less (the protégé/mentee).*

The learning process in a Doctoral program is a long-term mentorship relation. Mentorship is fundamental for Research!

Global South Specific Challenges

- Lack of mentoring structures and access to mentors, specially with experiences in AI.
- Lack of information on how to access/apply to high quality graduate programs (Masters and PhD).
- Lack of connections and role models.
- Low investment in Education and Research by Governments.
- Unclear information on migration possibilities.
- People might need encouragement to leave their comfort zone.

Graduate School

- Applying to Grad School is difficult, many choices to make. Try to get a friend or mentor that can help you in the process, which significantly decreases uncertainty and mistakes.
- Consider **applying to programs around the world**, and not only to the US/Canada. Hyper-competition in these countries makes it more difficult to get accepted (standards might be much higher).
- Other countries might provide more support and more friendly visa regimes.
- Overall it should be possible to get scholarships and funding, this is more true for PhD programs than Masters.

What is required from a Doctoral candidate?

1. Intellectual maturity and motivation for Science and the research topic. This is due when **things go wrong** a lot of people simply quit the program, and the supervisor wants to prevent this. Tolerance to failure is very important.
2. Match between your research interests and the ones in the research group. This includes previous professional experience, Master thesis, Internships, etc.
3. Good grades (note this is 3rd from the top, it does not completely disqualify a candidate). It is important to have good grades in subjects related to the research topic.

What to look for in a Doctoral Supervisor?

- Experience supervising Doctoral students (past success predicts future success).
- Experience and expertise in the research topic. Does not have to be a perfect match.
- Connections with the international community of the research topic.
- For migrant students, might be important to consider if the supervisor has previously had international students. Similarly for Female candidates.
- Remember that you can always have more than one supervisor, and it is the student's choice. This can bring possible conflicts but it is also a **backup** in case of problems with the main supervisor. Very useful for interdisciplinary topics.

Interviews

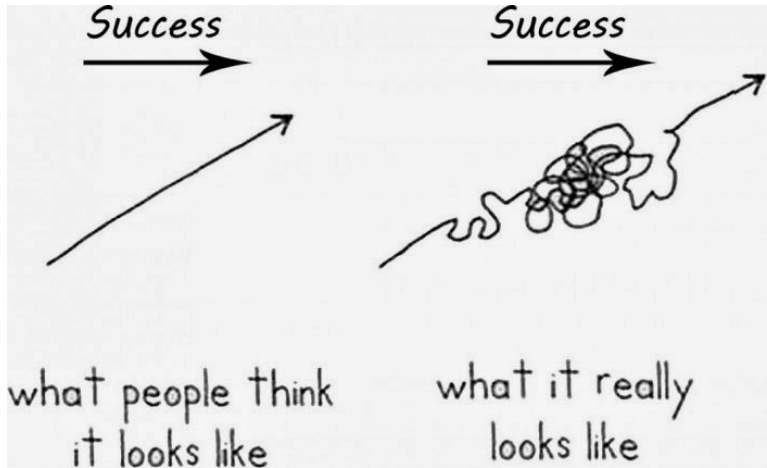
- An **interview is like a date**, it evaluates the connection between two people. The University/Supervisor/Company interviews you, the same as you interview them. It is a two way process.
- It is the best moment to do any types of questions. For example living costs, group dynamics, how many students have previously succeeded/failed. It is not a problem to make hard questions.
- You have to consider that you are making a long-term commitment (3-5 years of your life) to a research topic, so the interview is a good place to gather information to make a decision.
- Supervisors are aware that the candidate might be applying to multiple Universities.

Success in a Doctoral Program?

Success in completing a Doctoral degree depends on the following (and in order):

1. Motivation for Science and Research.
2. Motivation for thesis or research topic. Very important to remember that a thesis topic is completely of the student's choice.
3. The supervisor, its supervision style (Absent, micromanager, good mentor, etc), and its support during the Doctoral program and thesis drafting.
4. Match between the candidates' research interests and the supervisors'. No need for perfect match.
5. Maturity and research experience of the candidate. If the candidate does not consider the suggestions and experience of the supervisor, failure is possible.

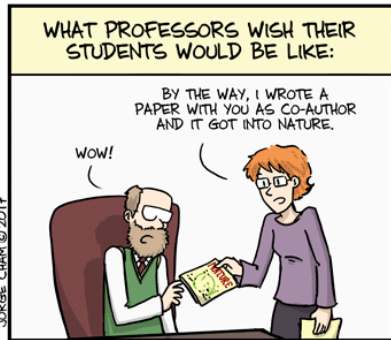
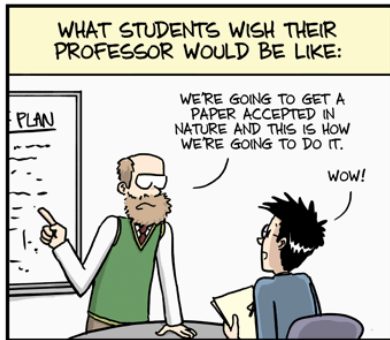
Research in AI - Hidden View



Research in AI - Student View

- Find and get **people that can support you!**
 - 2nd/3rd/4th/n-th supervisor. You always choose them.
 - Mentorship from Senior researchers or Senior students.
- When writing research papers/reports, **get feedback from other people.**
 - Gives you a different view on your writing or experiments. Typical comments are things that one does not immediately see.
 - It usually improves your writing and research skills. An independent view of your work is always very useful.
- If you are a advanced PhD student, **review papers.**
 - Conferences typically draw reviewers from previous/current paper submitters.
 - Journals have reviewer databases. Contacting the Editor is fine.
 - It takes time but it is very rewarding. It improves your research skills and exposes you to low quality papers that are commonly submitted, and to state of the art topics.

Expectations and Reality



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Research in AI - Profs and Advisors

- Always remember that **professors are human**, they have their biases, and cannot possibly know everything.
- A Professor in the supervisor role should **always support and not undermine a student**.
- Typically Professors were experts in their field, but many have outdated knowledge.
- The worst Professor is the one that think he/she is right because he/she is a Professor.
- The **best Professor is humble** and can always argue with scientific evidence.
- Many people kind of "worship" Professors and believe them just because they are Professors.
- A good Researcher is **always skeptic** (when necessary).

Research in AI - Topic Impact

- Work/research on interesting topics, find your own niche.
- Consider **societal and research field impact when selecting problems**.
 - If the problem is not important, when solved, only a few people will care.
 - If its a very important problem, even if progress is small, it will have a large importance and impact.
- Consider the impact of AI developments on minorities and disadvantaged groups.
- Think deeply on **who gets power** by an algorithm. Always think and prevent misuses.
- Just improving on the state of the art (a % on a benchmark) is not always the best. **New problems, tasks, and datasets, are very important too!**

Research in AI - PhD

- A Doctorate can be a pretty lonely experience. Always try to break that loneliness.
- There is always a fear to be an **impostor**, that your research is exposed as low quality or fraud. It is a constant struggle against impostor syndrome. **Mentoring helps :)**
- A lot of people do not like to share or discuss their research, for fear of criticism or finding flaws. But this **discussion is fundamental for scientific progress**. If there is something wrong, it is better to discover it early.
- **Always try to attend conferences and workshops**, publish papers, get reviewer feedback, connect with mentors.
- Try to do networking, connect with people working in similar topics, or communities (like LatinX in AI, Black in AI, Women in ML, Queer in AI, Indigenous in AI, etc).

Tips for Networking

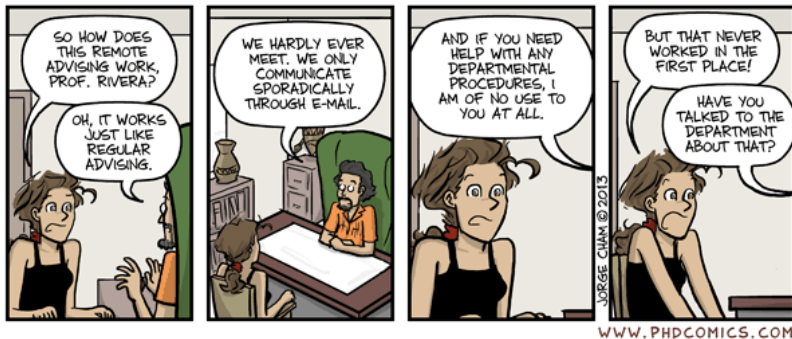
- Conferences are basically networking events, **everybody** is doing networking at some level.
- Always try to connect with people, through (virtual) conferences, events, Twitter discussions, affinity workshops, etc.
- Try to be always clear on what you need. People cannot help if you are not clear in what your needs are. Consider uncertainties in your own needs. **There is nothing wrong in asking.**
- Connect with people that have **something in common** with you, like ethnicity, research topics, citizenship, interests, etc.
- Do not be sad if people do not reply, not everybody has the time. Consider that people might be busy. It is not always about you.
- If writing emails or messages, be specific on what calls your attention about that person (like expertise, papers, etc). The most important thing is **not to be generic.**

Visibility

Minorities sometimes are invisible to some people, but this can be counteracted with modern technologies.

- Have a Twitter account, or a website. Always try to keep it up to date.
- Participate on Twitter or online discussions. Try to always **have a voice on topics of your interest**.
- Participate in Conferences and any kind of workshop or online event. **Always try to network** with like minded people.
- Always try to **highlight how you are different from other people**, for example, expertise, papers, research interests, ethnicity, gender, etc.
- If there are public directories (WiML for example has one), try to be listed there, as some people might use it to find connections, like for keynote speakers or just networking.

Remote Supervision



Thank you! Questions?

