Soft Skills for PhD Researchers

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Introduction

• Not about technical skills
• Not about obvious skills (e.g., motivation, timeliness, initiative)
• Some of the skills are specific to NLP
• Not in any specific order
• Not intended to intimidate, but to help
• Try an annual self-assessment!
• Feedback welcome!
Ability to build evaluation pipelines and perform evaluations for new tasks
Ability to locate and read the relevant papers on a new problem
Ability to come up with "easy" and "reasonable" baselines
Ability to find, download, install, and run existing software from third parties
Familiarity with machine learning, graph theory, linear algebra, calculus, combinatorics, statistics, and text processing
Understanding of linguistic phenomena and annotation
Understanding the variability of human judgments
Ability to write good narratives of experiments
Ability to write good overviews of existing research
Ability to develop and give presentations
Ability to discuss research with other team members
Ability to see a problem or an approach from a very broad perspective
Ability to assess the feasibility of a problem or approach
Ability to plan a research project and execute it over time
Intuition to try alternative methods
Willingness to give and receive help from the team
Understanding of the relative advantages and drawbacks of general methods across problems
Ability to implement in code generic algorithms and to make appropriate modifications to them.
Understanding of related areas such as bioinformatics, statistics, etc.
Understanding of computational complexity
Understanding of the fundamental data structures and algorithms
Familiarity with the availability on the Web of relevant corpora, papers, and tools
Excellent understanding of UNIX, including process control, scripting, and backup
Ability to build web-based and local demonstration systems
Ability to describe one's research to others with different levels of overlap in backgrounds with the student's
Understanding of project management: github, documentation, modularization, portability of code
Knowledge of a number of programming languages: C/C++, Java, perl, python, matlab
Ability to plan one's time, esp. wrt. courses, travel, committees
Ability to read a paper and abstract its main points – both strengths and weaknesses
Ability to draw charts, diagrams, screen snapshots, and other illustrations for papers
Ability to write quick scripts to convert data from one format to another
Ability to write quick scripts to test existing libraries or external software
Ability to write quick scripts to evaluate experiments
Ability to teach introductory classes, as well as plan it and grade it
Ability to relate one's work to similar problems in related research areas
Ability to store and retrieve data in a database systems
Ability to write interfaces to existing resources: both local and Web-based
Ability to network with colleagues
Ability to promote oneself
Ability to organize events: colloquia, external visits, etc.
Ability to build an end to end system
Ability to take initiative and to propose new projects
Ability to write proposals for funding
Ability to elicit assistance from advisers, fellow students, and others
Ability to ask intelligent questions at talks
Ability to exploit available opportunities
Ability to create and exploit unique data sets
Ability to design and perform user studies
Ability to request and obtain IRB support for user studies
Knowledge of a range of research methods, and an ability to read and give feedback on colleagues' work, even in other areas.
Ability to initiate collaboration with others
Knowledge of people who can give you helpful feedback on your work
Knowledge of research communities in which to become an active member, get good feedback on his or her work and get exposure of his or her work to others
Awareness of one’s strengths as a researcher and future teacher (for people with academic career aspirations).
Ability to emphasize one’s strengths and use them to have impact
Sharing code (e.g., github)
Advertising/outreach/blog posts
Looking for hidden doors that will open for you
Ability to keep your commitments
Motivation to exceed expectations
Strong mathematical background
Ability to replicate papers
Keep track of new developments
Ability to cope with impostor syndrome
Ability to ask for help
Ability to keep a research diary
Motivation to write a few sentences each day
Academic honesty
Keeping track of the big picture
Interests in related subjects
Ability to find the right data
Ability to maintain a work-life balance
Patience
Ability to organize your daily routine
Ability to make the most of internships
Ability to make the most of conferences
Ability to supervise undergraduate students