P4: Research and Teaching Statements

How to prepare application materials.
Research Statement Overview

- The research statement is your chance to demonstrate:
  a. You are working on an important area that matters.
  b. You have a vision for how to address challenges in that area.
  c. You have developed new techniques/methodologies/systems/approaches to solve key challenges in that area.
  d. Others care about the outcomes of your research.
  e. You are prepared to undertake future exciting work.
  f. Depending on your field, you might have to focus on what your future 5 to 10 year vision is.

- Three main components:
  a. The problem or opportunity your research is addressing. Demonstrate you understand its significance.
  b. Describe your research. Describe the questions and hypotheses that guided the research, and whether findings changed the initial hypotheses.
  c. Future work.

- Readers will likely be a broad audience
  ○ You can assume the readers will be technical, but not necessarily in your area.
  ○ Provide enough detail to convince the reader you do good work.
  ○ Further specifics and nitty gritty details are already in your referenced papers.
Essential Elements of the Research Statement

- **Appropriate visuals!**
  - E.g. of an apparatus, or a sample, that shows the methods and procedures you used and are familiar with.
  - Should be high-level, however. Details are in the papers.

- **References to papers.**
  - Do not hide these! Make it overly easy for readers to see your work has been in the appropriate venues.
  - Include the colloquial name (if applicable) in the citation. Remember, a broad audience won’t always know the full name of the venue.

- **Impact.**
  - Do not be shy about providing evidence that others care about your work. It might feel like bragging, but it’s not.
  - Examples: others using your results, invited talks/demos, follow on papers from other groups, companies using your work, spinoff startups, inspiring new workshops, helping funded proposals, news coverage, citations, etc.

- **Funding sources.**
  - Identify funding opportunities
    - Don’t just write NSF, NIST, NIH...mention what programs in each organization (you have to do some research)
  - Also include if you helped with the proposal.
Things **Not** to Do in a Research Statement

- Be too negative.
  - Talk about how cool your stuff is without putting down others’ work (e.g. “All of the work in this field is terrible, so I created X, Y, Z to overcome the limitations”).
  - Again, broad audience, you never know who is going to read this statement.
  - Delicate balancing act.
- Go strictly chronologically.
  - You of course did the work in a certain order, but that doesn’t necessarily make for a compelling story.
  - Readers do not care what order you did things in.
  - A narrative with a cohesive story is much more convincing.
- Propose unbelievable or simply iterative future work.
  - Your track record should demonstrate you are capable of your proposed future work.
  - Your future work should not just be extensions of your existing projects or advisor’s work.
- Use field-specific or project-specific acronyms.
  - Again, broad audience. Even if you define the acronym, it is often difficult to remember when reading.
  - E.g., the thing may be called a “Central Service Scheduler (CSS)”, but it is easier to read if the text says “scheduler” instead of “CSS”.
Developing a Future Work Plan

- This takes some thought and planning.
  - Really have to think about where you want to take the field and your work.
  - However, this is by no means a contract, and things will certainly change.
- Provide enough justification that readers understand the ideas are useful and feasible.
- There should be a connection to your existing work.
  - Readers should be able to answer: “Why are you the one most qualified to carry out this future work?”
- State or allude to potential collaborations.
  - You want readers to get excited about the potential to work with you (or at least for others in the dept to work with you).

Some recommendations:
- Create notes/powerpoints with your ideas throughout your PhD.
  - If ideas come up to you, just write them down so you can refer to them in the future.
- Read NSF’s next 10 year vision. Take a look at new calls/proposals from NSF or agencies you and your advisor are familiar with to get ideas on where the research funding direction is headed
- Take a look at emerging markets in the next 5 or 10 years.
Other Research Statement Tips

- Get a lot of feedback.
  - Again, broad audience, so the more feedback you get from people a step removed from your area the better.

- Describe collaborations!
  - What better way to indicate that you are someone the dept can collaborate with than citing existing examples.
  - If you are the leader of a collaboration, be explicit. Again, this is not bragging.
  - You’re part of Link Lab, very interdisciplinary research lab...highlight that.

- Use headings and bullets and images and bolded text.
  - A wall of text is less fun to read, and readers are likely reading several (or more) research statements.
  - Make it easy on readers (you really aren’t trying to be subtle here).

- Length: 2-6 pages
  - This may vary field to field.

- Have an abstract before you get into details of your previous and future work.

- It is ok to list potential collaborators already at the school.
  - But make sure the case for collaboration is compelling, don’t just make a list.
Teaching Statement Overview

- For tenure-track positions at R1 institutions:
  - You are trying to demonstrate you will be at least a competent teacher.
  - The reality is this statement doesn’t carry much weight.

- This statement should include your experience with teaching and mentoring.
- Include your teaching philosophy

- Obviously, this is much more important for less research-focused institutions or if you are applying for a teaching-track position.
What to Include in a Teaching Statement

- Include your experience:
  - Teaching a class.
  - TAing a class.
  - New techniques and approaches you used in whatever teaching experience you have.
  - Include your rating and evaluations if they're good.
  - Guest lecturing a class or classes.
  - Mentoring junior PhD students, masters students, and undergrad students.
  - Running tutorials.

- You can include:
  - Your vision or mentality on teaching (teaching philosophy).
  - New ideas or approaches you want to use when teaching a class.

- Also include:
  - Which classes you would be good at or want to teach
    - Undergrad and grad levels
    - New course(s) you like to introduce

- Length: 1-2 pages
What Not to Include in a Teaching Statement

- Make sure the courses you are listing are actually offered at that University
  - Do not list some general courses...use the title being used at that University

- Don’t list crazy ideas for your teaching philosophy.
- Don’t promise too much.
  - Getting a research group going is a lot of work.
  - You won’t have time to develop a series of new courses, for example.
Cover Letter

- Length: <1 page
- Introduce
  - Yourself
  - What position (level and job ad) you are applying for
- Mention what you consider your area to be.
  - Search committees naturally want to organize things by area.
  - Helps get readers that will appreciate your work.
- You can include an overview of your work.
  - But, it’s kind of redundant with the research statement.
- Past and future vision
- You can overview of your teaching experience
- You can name drop.
  - Faculty you have discussed your work with or your application with.
- You can mention conferences you will attend that people should reach out to you at.
- This is also the place you could mention any “unusual” circumstances (although of course you don’t have to), e.g.:
  - Partner also applying (arguable…)
CV

- Show off your accomplishments.
- List:
  - In bullets, what your specific (top 5 probably) areas of research you associate yourself with
  - Papers. This is important.
    - Again, make the venues easy to understand.
    - Clearly differentiate in submission papers from accepted papers. But do include them!
  - Collaborations
  - Talks
  - Grants/grants writing experience (regardless of being funded or not)
  - Mentoring
  - Patents