

Dos and Don'ts for Research Statements

Writing a good research statement is a difficult task. You are trying to sell yourself and your research to someone who knows very little about your area. Graduate students often do not get sufficient practice in explaining the big picture, and most are not very comfortable with the idea of selling themselves.

One thing that most students do not realize is that the research statement is much more important as a resource for your letter writers than it is as a part of your job application. Indeed, prospective employers will primarily judge your research based on your letters. And statements from a well-written research statement often appear directly in the letters.

The key to remember is that the research statement is not the same as a grant proposal or a paper. You are trying to paint a picture, not tile a bathroom. You should only say correct things, but you should sacrifice technical detail for the sake of telling a story with broad appeal.

Introduction

Do call it a Research Prospectus. It sounds better.

Do start with a very broad overview of your research and where it fits into mathematics. If your first sentence is "I study mapping class groups," then you've already lost most of your audience.

Do give a brief history of your subject. Give the names of the founders of your area, with dates. Also, give the names of some of the most researchers in your area, either because they invented or inspired your subfield, or because they are responsible for the tools you use.

Do give in a few words the flavor of your work. What kinds of techniques do you use? What other areas of mathematics does your research borrow from or have connections to?

Main body

Do make different sections for the various parts of your research.

Do be correct. Never say anything false or ambiguous. That is a general rule for being a mathematician.

Do not be comprehensive. You do not need to define everything or explain every detail. You should not explain why your map is really an anti-homomorphism instead of a homomorphism; just call it a map. Instead of giving the long definition of a train track, just say that you can associate a self-map of a graph to a homeomorphism of a surface, and the associated transition matrix carries a lot of important information.

Do focus on sentences that every mathematician can understand and appreciate, even if they are not experts in your subfield:

- *This work answers an old question of this famous person...*
- *This work solves a fifty-year-old conjecture of this famous person...*
- *This work inspired a paper by these other people...*
- *This work opened up a new direction in this area...*
- *This work makes an unexpected connection between these two areas...*
- *This result is surprising because...*

Do build tension. Explain that the evidence was pointing one way, and your theorem says it goes the other way. Or explain that absolutely nothing was known about the problem. Or that even the basic examples could not be computed by hand.

Do constantly answer the question of why people should care about your work.

Do keep a high ratio of easily understandable sentences to technical mathematical sentences.

Do think about the visual appeal of your statement. Use generous amounts of whitespace, displayed equations, and pictures(!).

Do use the theorem, problem, question, etc. environments to emphasize the most important parts of your statement.

Do not abbreviate your name. The whole point of this document is to advertise yourself.

Do fit your research into a broad program. This requires work on the front end, in choosing the problems you work on.

Do talk about future work or work in progress, but focus mostly on completed work. This ratio can change as you progress through your career.

Do not use many symbols. The reader should be able to start reading in the middle of the statement without knowing your subject-specific notation.

Do make sure your statement is scan-able. What does the reader get by looking quickly at the page without reading? Are there lots of theorems and questions? Is the page pleasant to look at? Does it look organized?

Do not use references. That creates an extra step for the reader. Just say that so and so proved such and such in whatever year. Again, this is not a paper or a grant proposal!

This is all easier said than done. My most important recommendation is to look at other research statements in your area and steal the ideas that you like. You can use Google or ask people you know. I'll make mine available at tsr.gatech.edu. Good luck!