12 Steps in Pursuing PhD Research

by Lori L. Pollock

1. Admit to wanting to be a PhD student.

2. Breadth Literature Search.
   (a) Browse through the last 2-3 years of conference proceedings in your general area of interest.
   (b) Read titles and abstracts to get a feel for what kinds of topics are the current issues and of personal interest.

   **Result:**
   - A good handle on the current issues
   - 1-2 topics of interest for your own research

3. Thorough, Focused Literature Review.
   (a) Perform a thorough survey of the literature on your specific topic.
   (b) Create an online bibliography of articles.
   (c) Identify the places/people doing work in the area.
   (d) Identify what has been done in the area - the state of the art.
   (e) Think about the current limitations in the area.

   **Result:**
   - A solid background knowledge of what has been done in the specific area, who is doing it,...
   - A comprehensive, up-to-date bibliography of work in the area
   - An idea of what the limitations are in each project

4. An Ultimate Goal. Step back from the work that has been done, and ask where do you think it would be nice to go in this area? That is, what kinds of ultimate goals would be nice to achieve in this area to make everything perfect for the applications user? Brainstorm for the ultimate picture.

   **Result:** A description of the ultimate goals/objectives

5. The Big Problem List. Determine where the state of the art stands with respect to this ultimate goal.

   Brainstorm on a list of problems that need to be solved to fill the gap between the current state of the art and the ultimate goal.

   **Result:** a list of problems to be solved

6. Bite Off a Small Chunk. Choose one problem of particular interest that seems like a nice starting point, one of the less difficult problems. Work on some solutions to this problem, do some preliminary implementation/experimentation of the solutions to validate your solution for correctness and effectiveness.

7. The First Paper. Write a paper on your first results and submit to a conference.

8. Research Plan. Based on first results, and your initial list of problems, create a research plan for the remainder of the PhD dissertation work.


10. Just Do It. Follow your research plan as stated in the proposal, realizing that you may get sidetracked a bit by making alternate contributions, and thus have slight changes in the research planned.

11. Write, Write, Write. Write papers on each contribution as it is finished.

12. The Dissertation. Write the dissertation by creating an introduction, background chapter based on proposal and updates, chapters on each paper already written, and summary, conclusions and future work.