Improving your chances of admittance to a Ph.D. program

Nyle Siddiqui
About me

• Undergrad: University of Wisconsin - Eau Claire
  • Comp Sci + Math double major
  • Started conducting undergrad research in my Junior year
  • I was also once an REU student at the University of Minnesota
• Completed 3rd year of Ph.D. under Dr. Shah at CRCV
  • ORCGS Fellowship
What is a Ph.D.? 

Long, in depth, research exploration of one topic
Why do a Ph.D.?

- First and foremost: **Research**
- Some less-talked about points
  - Life skills
    - Delayed gratification, persistence, etc.
  - Personal growth
  - Pinnacle of achievement
    - Hopefully you will have created something completely novel by the end!
Getting started with Ph.D. applications

Identify your research interests

• Look for the topics which interest you
  • Undergrad projects which you really enjoyed doing
  • Personal projects
  • Internships
• The more experience, the better (and not just for the application)
• Don’t get intimidated; know your worth and your limits
Finding the best research labs in your area

• Lab ranking is more important than university ranking
• How to search for the best research group? Demo
• Many other factors to consider
  • Funding
  • Available advisors / reviews
  • # of current students
Finding research groups

Explore research group's website

- Find ongoing projects and publications
- Check their current students' profile
- Demo
Finding research groups

If you find the lab interesting, then look for admission criteria

- Deadline
- Minimum GPA and Test Scores
- Average admitted GPA and Test Scores
- Required Courses
- Usually pretty standardized
- Demo
List down the universities

- Make a document of the universities you did research. (maybe 15-20 universities)

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<th>Notified?</th>
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List down the universities

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<td>Sidney D’Mello - Ethical AI</td>
<td>Brad Hayes - AV, Collaborative AI</td>
<td>Christoffer Heckman - AV - CV</td>
<td>Claire Monteleoni - DL - Ethical AI</td>
<td>Alessandro Roncone LFS - RV</td>
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<td>Honglak Lee - DL, CV, AI</td>
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<td>Ju Sun - DL Optimization, CV</td>
<td>Catherine Zhao - AI, NN, DL, CV</td>
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| Yejin Choi - NLP, CV | SIMON SHAOLEI LOOKING FOR STUDENTS - DL AND RL | Steve Seitz - CV | Linda Shapiro - DL/CV | SHENG WANG - ML + BIOMEDICINE | Daniel Weld |
| Yong Jae Lee - CV, Generative Data | Yudong Chen - RL | Josiah Hanna - new faculty RL | Sharon Yixuan Li - OOD/NN | Yingyu Liang - DL Theory | Xiaojin Zhu (Jerry) - ML for teaching, adversarial ml/AI |
Ranking Universities

• Decide how would like to structure your chosen schools
  • Dream, realistic, or safety?
• Programs are only getting more competitive
• More people are applying for Ph.Ds than ever before
Graduate record exam (GRE)

- Like the SAT of grad school
- Three parts
  - Verbal Reasoning (score 130 - 170)
  - Quantitative Reasoning (score 130 - 170)
  - Analytical Writing (score 1 - 6)
- Some universities have started phasing this out
Research Statement (Statement of Purpose)

• Your research focus
• How you developed an interest in the area
• Your research experience
• Why you chose to pursue a Ph.D
• Why a particular university is the right place for you
  • Who you want to work with
Research statement (Statement of purpose)  
Your research focus

Be specific, with broad mentions of overall interest:

**Bad example:** "I am interested in Machine Learning"

**Good example:** "I am interested in Machine learning, specifically solving data-imbalance problems"
Research statement (Statement of purpose)
How you developed an interest in the area

Generic examples:
"During my childhood fascinated by sci-fi movies like Ironman",
"I see deep learning problems changing the world", etc.

Good example: "During my undergrad, I liked X, Y, Z subjects
and I enjoyed working on the coursework projects... I did an
internship/participated in a competition in the same field."
Research statement (Statement of purpose)
Your research experience

Don't give **specific** resume details:

For example: "I presented a poster entitled *Multi-clip validation strategy in learning action recognition* in *European Conference on Computer Vision 2020's 1st workshop in Visual Inductive Priors for Data efficient deep learning* in September 2020."

Keep it like a story and show your learning outcomes

For example: ".... our method achieves state-of-the-art, and I got an opportunity to present our work in ECCV workshop where I met several brilliant researchers and further motivated me to continue research."
Research statement (Statement of purpose)
Why you chose to pursue a Ph.D

Highlight your passion:
For example: "I spent the past two summers reading about deep learning and implementing my own projects. I want to pursue a Ph.D to replicate the feeling of achievement when I would discover something new or finally get something to work, and to continue to challenge myself."

Highlight your experience
For example: "After building my own neural network from scratch, I gained invaluable knowledge about the inner workings of such models. I began working with a professor at my institution on computationally efficient ANNs, similar to Professor X. here at [school]."
Research statement (Statement of purpose)
Why a particular university is a right place for you? 
Whom you want to work with?

Mention a few professors and lab that aligns with your research interest, but add some details

Bad example: "I am very excited to work with Dr. X on problems related to Infrared Image based computer vision; I am also interested working on Wireless Networks with Dr. Y, also I am open to work on Machine learning problem with Dr. Z

Don't be over specific*:

Bad example: "I am interested in working on PGD based adversarial attacks using Facial tattoos"

Good example: "I am interested in solving problems related to adversarial attacks on biometrics, as discussed in [paper] by [professor]."

Write a few lines why you think you are a suitable candidate for that lab:

Example: "From my experience the instance segmentation during my internship, I am confident that I can contribute effectively to cancer cell detection solutions"
Research statement (Statement of purpose) Facts

A good research statement takes plenty of time (≥ 1 month)

Get feedback from your seniors, alumni, and professors.

takes 5-10 iterations.
Recommendation Letters

• A critical factor in the selection

Who should you ask to write recommendation letter for you?
• University/REU Professors
• Internship Supervisors

Tips:
• Give the recommender sufficient time to write before the deadline (~1-2 months)
• Maintain a positive relation with the recommender before application (and after as well!)
• Tell them what personal attributes you would like them to highlight
Summary

• Identify what you’re interested in and enjoy doing
• Find research opportunities, get a publication if possible
• Reserve sufficient time for searching universities and applying
• The more specific and proactive you are, the better
  • Like the degree itself, your success is very self-driven
Good Luck & Thank you!