

Application Guidelines – LSU ATHENA

Hello. Thank you for your interest in joining Dr. Mills' lab at LSU.

Given below are some general guidelines to consider when applying to my lab, including our mission, my expectations, and application guidelines.

Research Mission:

ATHENA stands for **A**rtificial intelligence **T**echniques for **H**ardware-aware **N**eural network **A**utomation. Current interests include:

- Hardware-aware AI.
- AutoML Neural Architecture Search
- Model Optimization
- Explainable and Interpretable AI

Expectations of Students:

For potential students, I look if they have good soft skills and hard skills. There are also several skills that help, but are not required, and others that I do not expect you to have.

Please note that these expectations are aspirational and developmental. They are not a checklist students are expected to fully satisfy from day 1.

Soft Skills:

- **Self-motivation.** Graduate research requires sustained intrinsic motivation. You should have the innate curiosity of the scientist and be interested in advancing knowledge rather than pursuing graduate school for credentials or external expectations.
- **Professionalism and Reliability:** Graduate students must be able to manage competing responsibilities and consistently meet commitments.
- **Perseverance.** Unlike Undergrad, the directions in grad school are not easy and clear cut, and you will encounter times where you believe you did everything right and still failed, i.e., your paper gets Reviewer 2'd. This will happen more times than you can count one hand, so be ready to get back up again.
- **Ability to own your work [Necessary for PhD].** The bar for obtaining a doctorate is that your dissertation contains novel contributions from *you*. Novelty can be argued and shown through passing peer-review, but when you ultimately defend your work,

you need to prove that you know it inside and out, not simply that your advisor either did the work and put your name on it or told you what to do.

Hard Skills:

- **Strong coding ability, strong mathematical ability and experience with AI.** You will learn some topics in grad school, but to join a group, especially to get funding, you should have all three of these.
- **A good academic record.** Don't need to be an A+ student; I was not.
- **Willingness to work in a deadline-driven environment.** I primarily submit to *conferences* which have hard deadlines.

Helpful Skills:

- **Prior research experience.** This shows initiative for research, especially for BSc students.
- **Have taken an interest in reading scientific papers.** You need to read them to figure out how to write them, and what to write about.

Skills I Will Teach You:

- Excellent writing/presentation abilities, such as [Receiver-Oriented Communication](#).
- How to think scientifically and do research.
- Ability to “sell” the work and sell yourself.
- Ability to mentor junior students.

Red Flags:

- **A publication record emphasizing quantity over quality.** Depth > Breadth.
- **AI-generated/template emails.** Show me that you are familiar with my work.

How to Apply

Email keith.mills@lsu.edu and include:

1. Subject: *ATHENA Application*
 - a. (+*LSU*) If already a student.
2. CV/Transcripts.
3. 1-2 paragraphs about what your research interests are and why ATHENA is the right fit for you. I'd also like to know what you would do as my student.

Applications that engage directly with my research are prioritized.