Graduate School & Degrees Needed for Roles

Lishan Yang

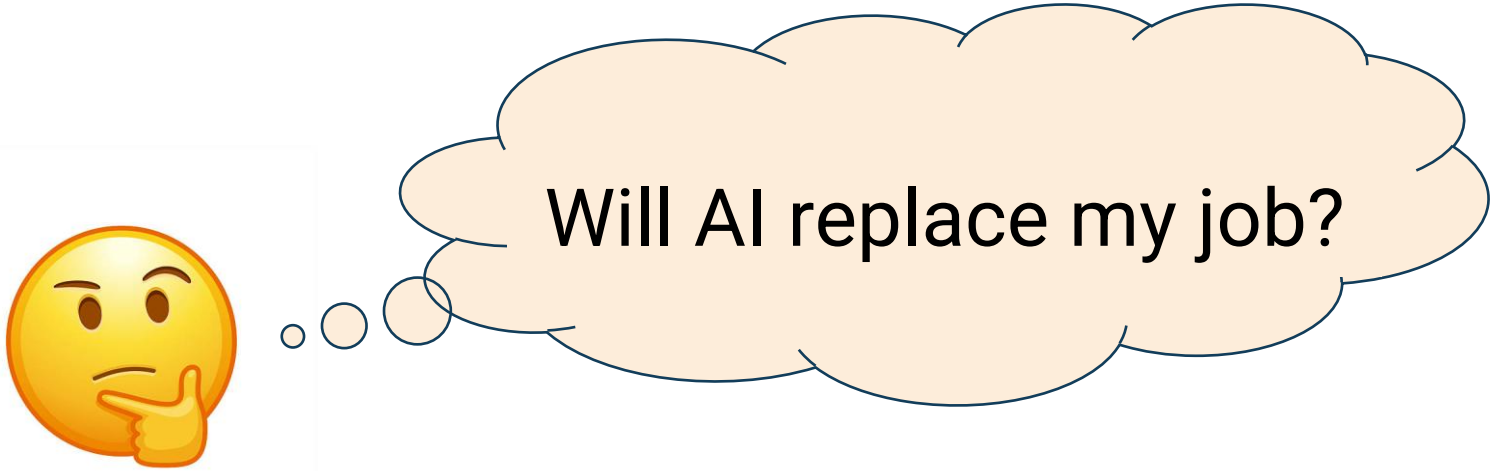
Assistant Professor
Department of Computer Science
George Mason University

lyang28@gmu.edu

What do you want to do in 5 years?

A higher degree is a tool, not a destination.

Living with AI...



- A graduate degree is **not** a guarantee of survival.

Degree “**Required**” ≠ Degree “**Preferred**” ≠ Degree “**Useful**”

Career	**Typical degree**	**Where?**
Systems/Infrastructure Engineer	BS / MS	Industry, Labs, Universities
Software/Performance Engineer	BS / MS	Industry, Labs
Scientific Computing/ Application Engineer	BS / MS	Labs, Universities, Industry

Degree “**Required**” ≠ Degree “**Preferred**” ≠ Degree “**Useful**”

Career	**Typical degree**	**Where?**
Systems/Infrastructure Engineer	BS / MS	Industry, Labs, Universities
Software/Performance Engineer	BS / MS	Industry, Labs
Scientific Computing/ Application Engineer	BS / MS	Labs, Universities, Industry
Research Engineer	MS / PhD	Industry, Labs, Universities
Research Scientist	PhD often preferred	Industry, Labs
Research University Faculty	PhD	Universities

HPC careers exist beyond academia and national labs.

MS vs PhD

MASTER'S

Deepen your expertise

- Advanced courses and specialization
- Typically 1-2 years
- Often self-funded

PhD

Exploring unknown

- Open-ended research problems
- Often 4-6+ years (U.S.)
- Often RA/TA supported

(Research Assistantship/Teaching Assistantship)

A PhD is not a longer master's program.

MS Checklist

- Am I ready for the job I want?
- Do I need deeper technical knowledge or specialized skills?
- Will a master's degree provide opportunities I cannot easily get otherwise?
- Do I want to explore a different field?
- Hesitating for PhD: Try research to test your interest

Enjoying Research ≠ Enjoying a PhD



Graduation Pressure

** Image generated from GPT6.*

PhD Checklist

- What if I cannot graduate?
- What if I cannot graduate on time?
- What if I cannot publish my paper?
- What if I spend two years on a project and the project goes nowhere?
- What if my paper is rejected 7 times?
- What if I do not get along with my advisor and/or my labmates?
- What if the pressure starts affecting my mental health?
- .....

How do you react to

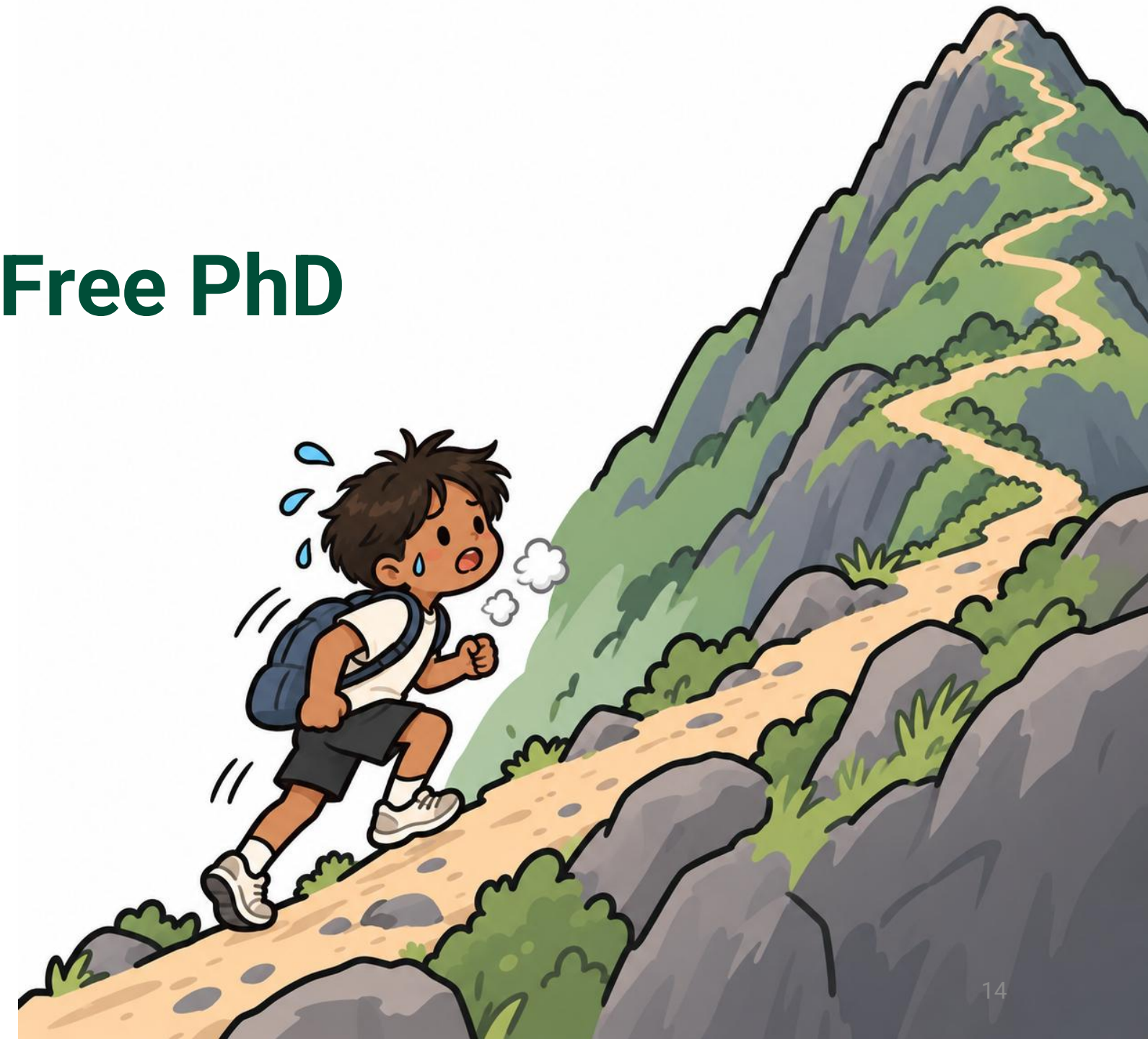
negative experiment results?

Research is about uncertainty.

Uncertainty ➡ ∞ Possibilities

Funded PhD ≠ Free PhD

- Time
- Energy
- **Patience**



** Image generated from GPT6.*

Choosing an Advisor

Research Fit

Advising Style

Expectations

Funding & Outcomes

Be Open



- Your direction can change
  - Project
  - Research area
  - Career path
  - .....

** Image generated from GPT6.*

We work to live, not live to work.



** Image generated from GPT6.*