

Research Career and Topics

Dr. Dongchul Kim

What is your Goal?

1. Long-term goals and Mid-term goals
 - a. Always uncertain
2. Short-term goals (after graduation)
 - a. Industry
 - Software
 - Database
 - Network
 - System/Cloud
 - Security
 - AI
 - b. Academy
 - Graduate school
 - Master or Ph.D.
 - Researcher
 - Faculty

Career in Industry vs Academia

1. Industry

- a. Work in a team
- b. Assigned by a manager
- c. Initiated by a company
- d. High salary

2. Academia

- a. Can work individually
- b. More flexible topics
- c. Self-motivated
- d. Low salary but better Work-Life Balance

What you have to prepare

1. Industry

- a. Resume
 - i. Skills
 - ii. Projects
 - iii. Internships
- b. Coding Interview
- c. Certificates

2. Academy

- a. Research experiences

Master Program

- Thesis
- Research with a professor for 2 years
- TA and RA
- PRF in UTRGV

After Master program

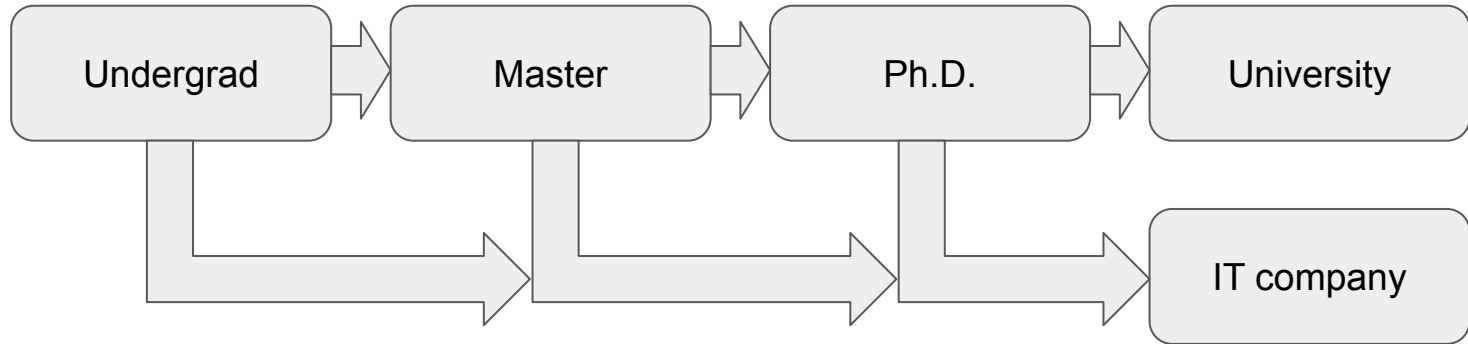
1. Ph.D.

- a. **You may want to have research experiences for your future Ph.D.**
- b. Ph.D. program recruiters will review your research experiences
- c. New Ph.D. programs in UTRGV
 - i. Ph.D. in Computer Science with Interdisciplinary Applications (Fall 2024)
 - 4~5 years support

2. Working in IT company

- a. Research (thesis) is helpful to extend your AI skills.
- b. Internship and coding interview
- c. FAANG

Goals



Goals

1. Ph.D. in UTRGV

- a. Support tuition and stipend (24K~26K per year)
- b. Less coursework
- c. Less living cost
- d. 4~5 years

2. Master in UTRGV

- a. TA and RA positions available (about \$1250 per month)
- b. More experience with AI
- c. 2 years

Professor's goals

1. Ultimate goals

- a. Finding solutions
- b. Making contributions to research community
- c. Serving students = Providing research opportunity to students (so that they can achieve their goals mentioned above)

2. Practical goals

- a. Publications
- b. External funding
- c. Advising students

Publication

- Conference vs Journal

- Conferences

- ICLR, NeurIPS, ICML, AAI, CVPR

- Journals

- IEEE Transactions On Systems, Man And Cybernetics Part B, Cybernetics
 - IEEE Transactions on Neural Networks and Learning Systems

- https://scholar.google.es/citations?view_op=top_venues&hl=en&vq=eng_artificialintelligence

- Visit conference and journal homepages

- Check deadlines

- Check templates

- Use Latex (Overleaf)

- Review process

- Hit and miss?

Research

- Theory (Algorithm) vs Application
- Problem definition
 - Survey
 - Search review/survey paper
 - Reading paper
 - Select your favorite or milestone papers
 - Implementation
 - Not every papers but baseline paper
 - Benchmarking data
 - Limitation
 - Think of limitation of the baseline or state-of-the-art methods
- Solution
 - Most difficult part
 - Start from the limitations mentioned above
 - Observe experiment results to get idea
 - Get insight from other papers

Research

1. Timeline (4 month for Ph.D. and 8 month for Master)
 - a. Survey (including implementation of baseline and state-of-the-art methods)
 - b. Solution (including experiment with solutions)
 - c. Experiment (including all baselines)
 - d. Writing
2. Outline of paper
 - a. Title - 0 or 8
 - b. Abstract - 7
 - c. Intro - 4
 - d. Related works - 5
 - e. Method - 1
 - f. Experiments - 2
 - g. Discussion - 3 and Conclusion - 6

Research Lab - MI@UTRGV

<https://miutrgv.github.io/>