For perspective new student

Limitation of current AI models

- Need big data to train
- Need big model to work well
- Energy hungry (all neurons needs to be active at the same time)
- Catastrophic forgetting

Focused research theme

- Improve data efficiency
  - E.g. few shot/zero shot learning
- Improve model efficiency
  - E.g. model compression
- Improve energy efficiency
  - E.g. Spike Neural Network (SNN), Mixture of Experts (MoE)
- Continuous learning
  - E.g Elastic Weight Consolidation (EWC)
- Neural network with external memory
  - E.g. Matching net

Target domain

- Healthcare/medical system
- Sports

Real-world problems

- No label/very few labels for training
- Noisy label
- Data imbalance
- Missing data
- Multi-modality
  - Encoding, modality competition
- Large computation overhead
  - Long training time, memory-hungry

Exemplar applications

- Keypoint detection
  - E.g. movement/posture/action detection/correction/recognition
- Anomaly detection
  - E.g. circuit board defects; tumor
- 2D -> 3D
  - E.g. Avatar animation
- Multimodal language model

Types of research

- Involving with hardware (sensor, robot, MCU,…)
  - E.g. Internet of Things
- Only deal with data and AI model
  - E.g. diagnosis with medical images

What you're expected to learn from the graduate school

- How to survey the paper
- How to present your ideas well
- How to solve a technical problem on your own (with or without the advice from your advisor)
- how to write a paper (maybe with the help of GPT..☺)
- How to stay calm when you're stuck in your work

Common questions

Q: How often to meet with the professor?

- Group meeting once a week (usually online)
- One message a day (over LINE)
  - To prevent you from wasting your time in the wrong direction

Q: when can I graduate?

- The sooner the better!!
- Publishing a paper is not a requirement to get graduated.
- Usually 2 years
  - Once you decided to join the lab: define the research problem you plan to solve
  - 1st semester: build you foundation knowledge (e.g. survey paper, learn AI programming,..etc)
  - 2nd semester: design/implement the method to solve your problem
  - 3rd semester: do your experiments
  - 4th semester: wrapping up and write your thesis
- But it's really depending on how much you invest your time into your research work!

Q: do I get paid?

- Yes, if you have a reasonable research progress

- Usually
  - Master students: 5K
  - PhD: 8K-10K

Q: Will I get a desk in the lab?

- Yes, but it’s on the first-come-first-serve basis

- It also depends on how often you come to the lab, when the demand of desks is more than the supply

Q: When do I need to come to lab?

- It’s up to you!

- What matters is if you get your work done. I don’t really care where you did your work

Q: what’s the language used in the lab

- Most of the students speak Chinese

- Some students from overseas do not speak Chinese, and you will need to talk to them in English

Q: do we have industry project

- Yes, from time to time
- An industry project topic is usually only assigned to students who have strong programming ability
- If you’re assigned to do an industry project, that WILL be your thesis topic (i.e. everyone will only have one project topic)