KEWEN WU

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EDUCATION

Bachelor of Engineering in Automation
Department of Automation, Tsinghua University, Beijing, China *09/2019–07/2023 (Expected)*

- **Courses:** (A+: 100; A: 95-100; A-: 90-95; B+: 85-90)
  Numerical Analysis and Algorithms(A); Operations Research(A);
  The Practice of C++ Programming(A+); Computer Principles and Applications(B+);
  Intelligent Optimization Algorithms and Its Applications(A-);
  Pattern Recognition and Machine Learning(A);
- **Academic Performance:**
  - Major GPA: 3.83/4.0
  - Major GPA(senior year): 3.93/4.0
- **GPA Ranking:** 27/157

PUBLICATIONS

Shiqian Li*, **Kewen Wu***, Chi Zhang, Yixin Zhu. *On the Learning Mechanisms in Physical Reasoning.* NeurIPS 2022 Conference.

RESEARCH EXPERIENCE

MetaConscious Group in Massachusetts Institute of Technology Cambridge, Massachusetts
led by **Prof. Guangyu.Robert.Yang** *07/2022–Present*

· Aimed to help understand the brain and mind by building computational models, focusing on building artificial neural network models for cognition. The research style is influenced by neuroscience, machine learning, and cognitive science.

· We built neural network which could match the experiment data in cognitive science, aiming to model a specific function or behaviour of human or animals.

. Modeled the memory recall system of human beings, including the primary and recency effect and specific recall order during the process of free recall.

. Focused on modeling the experiment data of the trajectories of mice in labyrinth, aiming to reveal the biological exploration system through reinforcement learning.

Cognition lab in Beijing Institute for General Artificial Intelligence Beijing, China
led by **Dr. Chi Zhang, Dr. Yixin Zhu, and Prof. Song-chun Zhu** *02/2022–Present*

· Combined various methods in machine learning algorithms, especially computer version and Multimodal Fusion to move closer to the capacities of human learning, aiming to construct more powerful AI systems as well as more powerful theoretical paradigms for understanding human cognition.

· We focused on analyzing the two learning mechanisms in recent physical reasoning studies.

. Conducted a thorough investigation between the Learning From Intuition and the Learning From Dynamics mechanisms.

. Challenged the effectiveness of mainstream method that designed dynamics prediction modules and treated physical reasoning as a downstream task, and gave potential orientation for future work based on our research.

Metric learing Group in Tsinghua University Beijing, China
led by **Prof. Jiwen Lu** *03/2021–1/2022*

- Designed similarity functions according to specific tasks in computer version, aiming to create a construction based on cognitive competence, which can be more explicable.
- We proposed a pair-adaptive visual similarity learning (PaVSL) framework based on transformer for image retrieval.
  - Adopted self-attention module to similarity method aiming to enable message passing through cross-sample embeddings.
  - Proposed an adaptive embedding selection (AES) method to only preserve a subset of semantic-relevant embeddings for each ensemble to participate in the similarity inference.

HONORS

Scholarship for Excellent Academic Performances: top 15% *09/2020*

2nd prize for Academic Promotion Project *05/2021*

SKILLS

Programming skills: Proficiency in Python, C++; Familiar with Matlab, C

Extracurriculars: Piano, Reading.

Language: TOFEL: 110 (Reading: 30; Listening: 30; Speaking: 23; Writing:27)