Sangjun Park

AI Research Engineer @ Upstage
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Research Interests

I aim to realize Human-Level AI, which is defined as AGI capable of performing all tasks that humans can do. I believe it is crucial to apply the computational basis of the human mind to AI, thereby endowing cognitive functions. Ultimately, I dream of creating a world where AI not only maximizes human productivity but also becomes a big part of social relationships.

Employment History

AI Research Engineer May. 2024 - Present
Upstage

Acamedic Researcher Oct. 2022 - Feb. 2024
Human Language Intelligence Lab

Machine Learning Engineer & Researcher Feb. 2020 - Aug. 2022
Scatterlab

Education

Sungkyunkwan University Mar. 2017 - Feb. 2024
Bachelor of Science in Department of Computer Science and Engineering
Bachelor of Arts in Department of Psychology
GPA: 4.24/4.5 Magna Cum Laude
Advisor: JinYeong Bak

Publications

- Yeonji Lee, **Sangjun Park**, Kyunghyun Cho, and JinYeong Bak. MentalAgora: A Gateway to Advanced Personalized Care in Mental Health through Multi-Agent Debating and Attribute Control. Under Review, 2024. [arXiv]
- **Sangjun Park** and JinYeong Bak. Memoria: Resolving Fateful Forgetting Problem through Human-Inspired Memory Architecture. Proceedings of the 41st International Conference on Machine Learning (**ICML Spotlight**: Acceptance Rate=3.5%), 2024. [arXiv | Github]
- **Sangjun Park** and JinYeong Bak. Lengthy Essay Generation with Summary-based Memory System. Proceedings of the Korea Software Congress, pages 1571–1573. The Korean Institute of Information Scientists and Engineers, 2023.

Research & Projects

1. Communication Ability

Devised Cooperative Problem-Solving Method through AI Inter-Communication Jun. 2023 - Jun. 2024

- Developed a methodology mimicking human cooperative social behavior where each LLM Multi-Agent is assigned a unique persona to collaboratively solve problems through their inter-communication of debating.
- Created a dataset TherapyTalk in collaboration with mental health professionals to ensure responses are grounded in expert knowledge.

- Proved the potential utility of our approach in mental health support domain, validated through comprehensive experiments and user study.

Developed Natural Language Interaction Method in Open-Domain Conversation Feb. 2020 - Feb. 2022

- Played a key role in diverse projects involving the development of an human-like conversational chatbot agent, Luda-Lee, aiming to be the best friend to users.
- Implemented retrieval framework and method for response selection for retrieval & ranking based response selection.
- Optimized BERT-based models through knowledge distillation method and applied computational optimization to reduce model inference time while preserving the original performance.

Developed Response Generation Method in Task-Oriented Setup May. 2019 - Nov. 2019

- Developed response generation techniques for task-oriented conversations aimed at promoting mental health.
- Researched and developed multiple natural language processing models such as sentence similarity model or conditional response generation model, etc.
- Released StoryForest to Google Play Store, the application was downloaded over 1000 times.

2. Memorization Ability

Designed General Memory System Reflecting Human Cognitive Architecture Feb. 2023 - Jan. 2024

- Designed a new memory system for deep neural networks, Memoria, which is based on the theories of human memory such as Hebbian theory and Multi-Store model imitating structural models of human memory.
- Conducted extensive experiments to prove the effectiveness of Memoria in enhancing long-term dependency consideration, applying it to Transformer-based models such as BERT and GPT.
- Discovered the similarity of long-term memory between humans and Memoria by showing that Memoria closely reproduces the three well-known effects of human memory.

Developed RAG-Based Memory System for Conversational AI Feb. 2022 - May. 2022

- Designed a way of memory utilization process emulating humans' three memory functions: extracting, memorizing, and retrieving using the previous conversation context as a form of memory for our conversational model.
- Developed a memory reminder model to retrieve relevant information from memory pool based on the current context and conducted pretraining BART to serve as the foundational model for memory extraction.

Awards & Honors

- SKKU OpenSource SW Activity Top Award 2023, 2024
- KSC Paper Participation Award 2023
- NAVER Representative Award (1st place in government-sponsored AI competition of total prize: $27K) 2021
- TOPCIT Army Chief Staff Award 2019
- Student's Success Scholarship 2019
- 2018 SKKU BugBounty Incentive Award 2018
- 2017 SKKU BugBounty Special Award 2017
- Sungkyun Software Scholarship 2017 - 2019, 2022, 2023
- Dean's List 2017 - 2019

Techniques

- Promogramming Languages: Python, C/C++, Go, Java, Javascript, Arduino
- Machine Learning Frameworks: Scikit Learn, Tensorflow, Pytorch, Lightning, Huggingface Transformers
- SW Development: Visual Studio Code, git, Docker, Flask, Kubernetes, Kubeflow, Faiss, AWS, GCP

Teaching Experiences

- Mentoring Foreign Students in Major Classes Sep. 2022 - Dec. 2022

- Arduino Mentoring — Dec. 2019
- Computational Thinking and Software Coding — Mar. 2019 - Jun. 2019
- Freshman Python Education — Feb. 2019, 2018

Languages

- Korean (native), English (fluent)

References

JinYeong Bak
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