

AI & Robots that Harmonize with Humans to Create Knowledge and Cross Its Borders

Project manager

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R&D institutions

OMRON SINIC X Corporation,
NAIST, Kyoto University, Chubu University, The University of Tokyo, RIKEN

Summary of the project

In innovation, deductive thinking is necessary for continuous performance improvement, while paradigm disruption requires knowledge creation through inductive thinking and abduction, as well as knowledge cross-border migration between fields. We aim to create a world in which researchers and AI can harmonize and produce Nobel Prize-level research results by 2050.

Milestone by year 2030

AI robots innovate based on the instructions of researchers in various fields, and the papers compiled as the results are accepted.

Milestone by year 2025

AI robots can understand research conducted by researchers at such a level that they can reproduce and explain the research themselves.

	2024	2027	2030	2040
Study loop	AI robots learn and evaluate human research behavior	AI robots partially assist humans in all parts	Automated analysis Semi-automated experiments	Humans focus on the creative thinking part
Role of Researchers	Researcher	Supervisor and senior students	Supervisor	PI
Role of AI Robots	Reviewer	Bachelor student	Ph.D. student	Researcher

R&D theme structure of the project

During the Feasibility Study period, through document information and interaction with researchers, we will carry out research that will be an offshoot of AI to understand human research. In collaboration with PM Harada towards the same goal, we will advance the development of AI robot-driven science. In the future, we plan to handle experimental science in more diverse disciplines in a structure that allows simultaneous deployment of research AI robotics results to multiple disciplines while avoiding bottlenecks and stagnation.

1. Multimodal XAI to understand relations among papers

Build a scientific foundation model and an edge to UAI

- Yoshitaka Ushiku (PI, OSX)
- Hiroyuki Shindo (Associate Professor, NAIST)
- Hironobu Fujiyoshi (Professor, Chubu Univ.)
- Takayoshi Yamashita (Professor, Chubu Univ.)



2. Cyber-physical co-evolutionary AI

AI for knowledge exploration with researchers

- Yukino Baba (Associate Professor, UTokyo)
- Koichiro Yoshino (TL, RIKEN)



AI for knowledge exploration through physical space

- Seijiro Matsubara (Professor, Kyoto Univ.)

