01. Big-data and AI-enabled Cyberspace Technologies

Program Director (PD):Yuichiro Anzai
Executive Academic Advisor for Keio University,
Senior Advisor and Director of Center for Science Information
Analysis Japan Society for the Promotion of Science

Aim

Overview

A system mutually linking cyberspace and physical space is needed to realize Society 5.0; however, various elements for development and other issues still remain. Among cyberspace platform technologies, this project particularly establishes highly-sophisticated human platform technology which contribute to human-AI collaboration and conducts social implementation of a cyber-physical system utilizing big data and AI.

Goal

To create more than 20 practical applications that improve productivity (work time, learning speed, etc.) by more than 10% through an establishment of platform technologies below,

- Develop the “Human Interaction Platform Technology” which enables advanced cooperation between human and AI, and created examples of effectiveness verification and practical application through demonstration experiments in areas where collaboration between human and AI is considered to be effective (For example, nursing care, education, customer service, etc.).
- Develop the “Cross-Domain Data Exchange Platform” that connects data held separately by industry, government and academia and supplies it as big data that can be used by AI within three years, put it into full-scale operation within five years, and create practical applications.
- Develop the “AI based Automatic Negotiation Platform Technology” which automatically adjusts win-win conditions through multiple AI collaborations, and verify the effectiveness through demonstration experiments and put it to practical applications.

Exit Strategy

To create new business models by having end-users (including companies) of each domain (nursing care, education, customer service, etc.) participate from the initial stage of development, and by having developers and diverse users conduct demonstration experiments using developed technologies.

Economic and Social Impact

To contribute to the improvement of the productivity (2 percent annual improvement by 2020), the shortage of caregivers (approximately 370,000 people in 2025 and 17% in turnover rate in 2015) and the boost of the social security costs (approximately 20 trillion yen in 2025) in our country.

To Achieve

R&D Contents

(1) Human interaction platform technology：【Sub PD: Mochimaru】

- Development of advanced interaction support technology that collects and structures non-verbal data related to human behavior and cognition to realize advanced human-AI collaboration and supports making decisions in given situations and communicating with others based on individual needs.
- Development of advanced dialogue processing technology that enables multimodal memory, integration, recognition, and judgment for human-AI collaboration.

(2) Cross-domain data exchange platform technology：【Sub PD: Koshizuka】

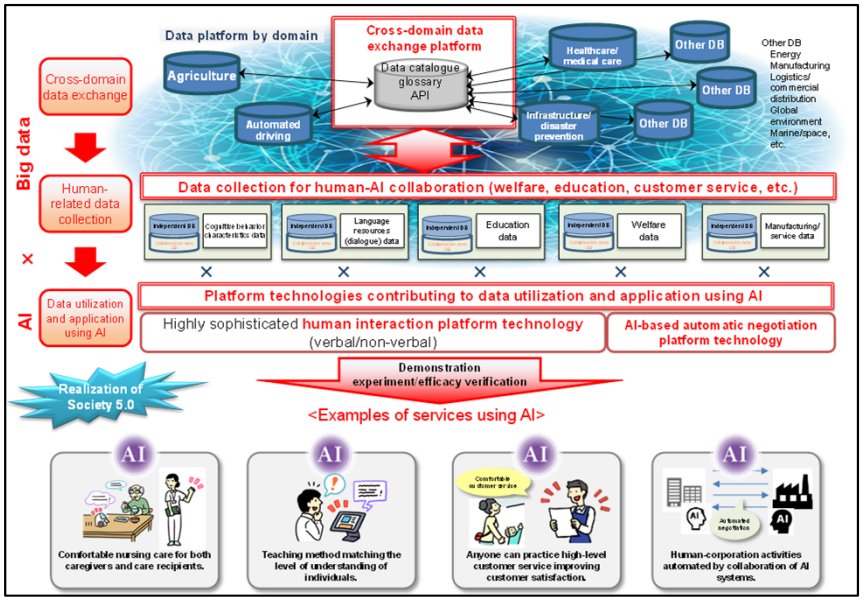
- Development of technology for cross-domain data sharing and data utilization and one-stop platform for supplying these data.

(3) AI-based automatic negotiation platform technology：【Sub PD: Washio】

- Development of technology of communication protocols, vocabulary definitions, etc. to automate negotiation and collaboration among multiple AIs (Example : To automate the adjustment of the terms and conditions of transactions among multiple companies).

(4) Architecture development：【 Sub PD: Koshizuka 】

- Development of an architecture that enables cross-domain and cross-company collaboration in domains such as smart cities or personal data.



SIP 戦略的イノベーション創造プログラム
Cross-ministerial Strategic Innovation Promotion Program

Related Ministries: CAS, MIC, MEXT, MHLW, METI