Service robot control by generative AI

Flexible and smart robots that understand a variety of tasks and realize "Omotenashi" (hospitality)

#Well-being, Human Capital Management
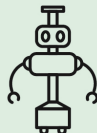#Customer Experience Value Creation #Productivity Improvement

"役割"と現在の状況から自発的にタスクを決定行動
Spontaneously decides and acts on tasks based on "role" and current situation

役割と業務知識
Role and Business Knowledge

自身の身体
Own ability

周囲の状況
Situation

LLMの状況判断(Situation Awareness):

現在の役割は介護施設での生活援助。
Nさんが談話室のテーブルで手持ち無沙汰にしている。

Current role is assisting in a nursing home.
Mr. N is bored at a table in the common room.

LLM出力(Output):

マニュアルに該当する類似状況の記載：あり

知識： Nさんは足が悪い。麦茶をよく飲む。

行動計画： いつも飲んでいる麦茶を持ってテーブル脇へ移動し、
配膳した後、今日の調子や困っていることを確認する。

Description of similar situations applicable to the manual: Yes
Knowledge: Mr. N has a bad leg. He often drinks barley tea.
Action plan: Move to the side of the table with the barley tea he usually drinks, and after serving it, check how she is feeling today and what he is having trouble with.

/// Technical Issue

Existing rule/algorithm base only allows simple tasks that require human assistance to be incorporated into the work, such as cleaning and some aspects of meal delivery.

///Research Goal

Contributing to issues such as a declining workforce and assisting the elderly by service robots that can perform their tasks autonomously in shared spaces with humans.

---Technology

- LLM enables the robot to generate action plans based on understanding of conceptual instructions such as tasks and roles.
- Unique feature is that the robot can generate action plans and act spontaneously without human instructions.

---Novelty

While marketed technologies that utilize LLM for robot behavior require specific instructions for task content, this technology generates its own tasks, enabling autonomous robots to act based on abstract norms such as roles and manuals.

---Applicable Business

In the fields of welfare, nursing care, and housekeeping services: Apply to a service robot that can monitor the health and safety of elderly people in nursing homes and private residences, assist with daily living tasks (such as serving drinks, encouraging medication adherence, conveying messages, etc.), and manage other minor requests that cannot be addressed by staff or family members, while optimizing the service for each individual. (Technology establishment date: 2024/4Q)