Introduction to National Center for AI Robotics

National Institutes of Applied Research, Taiwan

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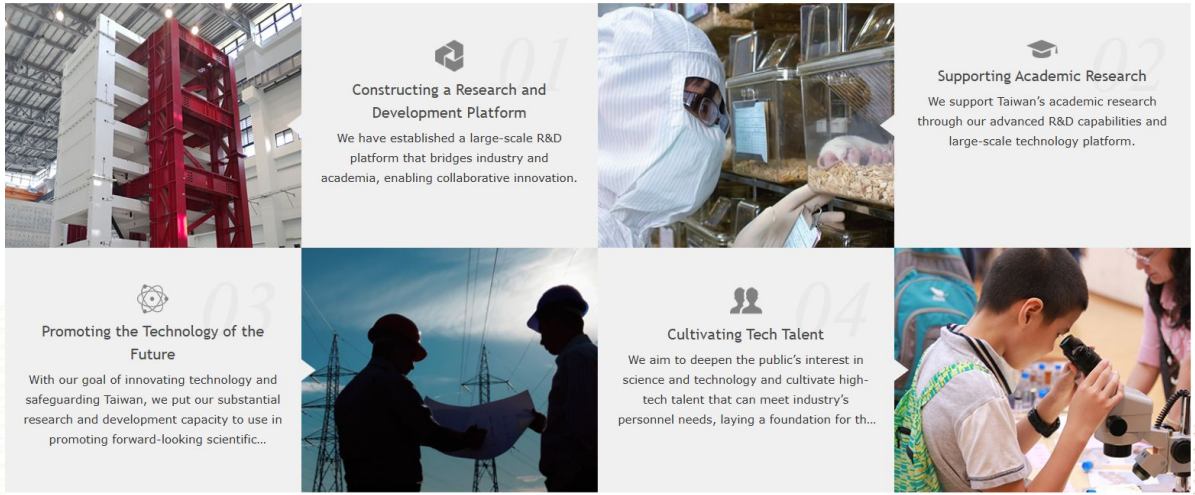
January 8, 2026

NATIONAL INSTITUTES OF APPLIED RESEARCH

NATIONAL INSTITUTES OF APPLIED RESEARCH, under the guidance of the **National Science and Technology Council**, was established in 2003 and oversees seven national research centers. With our vision of “Global Excellence, Local Impact”, we provide domestic industry, government, academia, and research institutes with research facilities, development platforms, and technical services in fields including earth and environment, information & communication technology, biomedical technology, and science and technology policy.

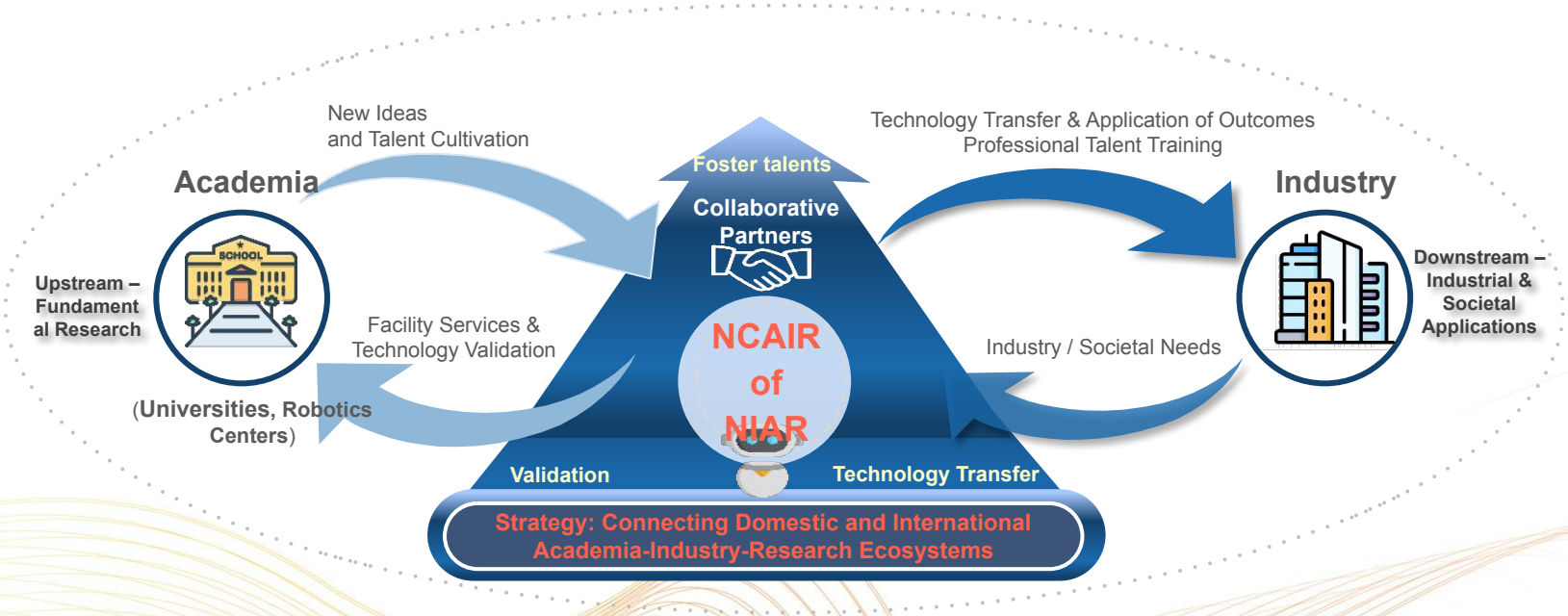


The NIAR consists of

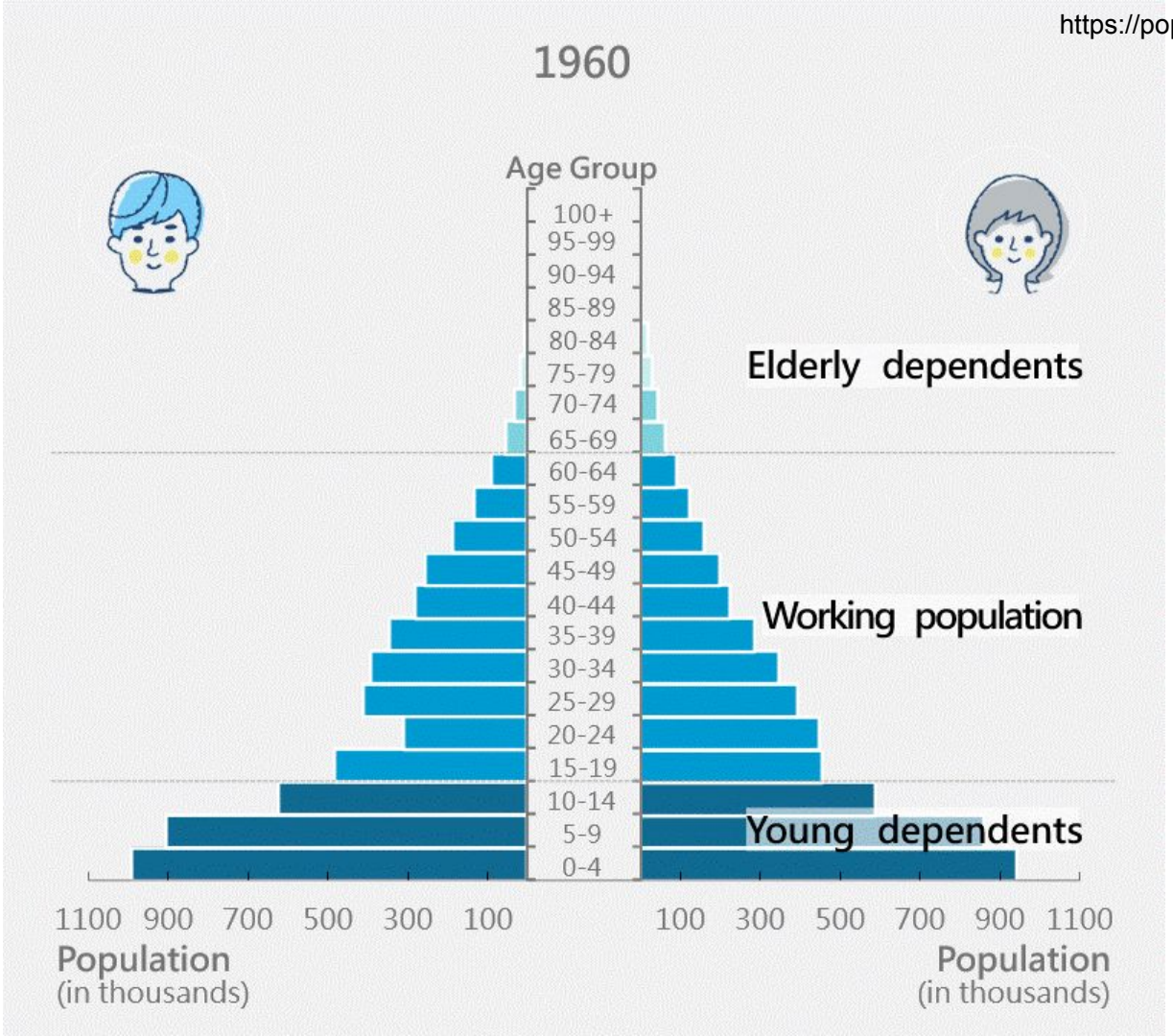
1. National Center for Biomodels (NCB)
2. National Center for Research on Earthquake Engineering (NCREE)
3. National Center for High-performance Computing (NCHC)
4. Taiwan Semiconductor Research Institute (TSRI)
5. National Center for Instrumentation Research (NCIR)
6. Science & Technology Policy Research and Information Center (STPI)
7. Taiwan Ocean Research Institute (TORI)
8. **Preparatory Office of AI Robotics Research Center (Now)**

National Center for AI Robotics

Aligning with National Robotics Policy to Bridge Academia and Industry, Driving Innovation and Application



https://pop-proj.ndc.gov.tw/main_en/



Taiwan faces rising shortage of construction workers

Construction sector also experiencing price hikes on raw materials

Feb. 8, 2022 14:50

Taiwan hotels hungry for more manpower post COVID

5-star hotel general manager laments he has been making beds for a year

Dec. 28, 2022 17:40

Nursing shortage in Taiwan worsens as 5,000 leave annually

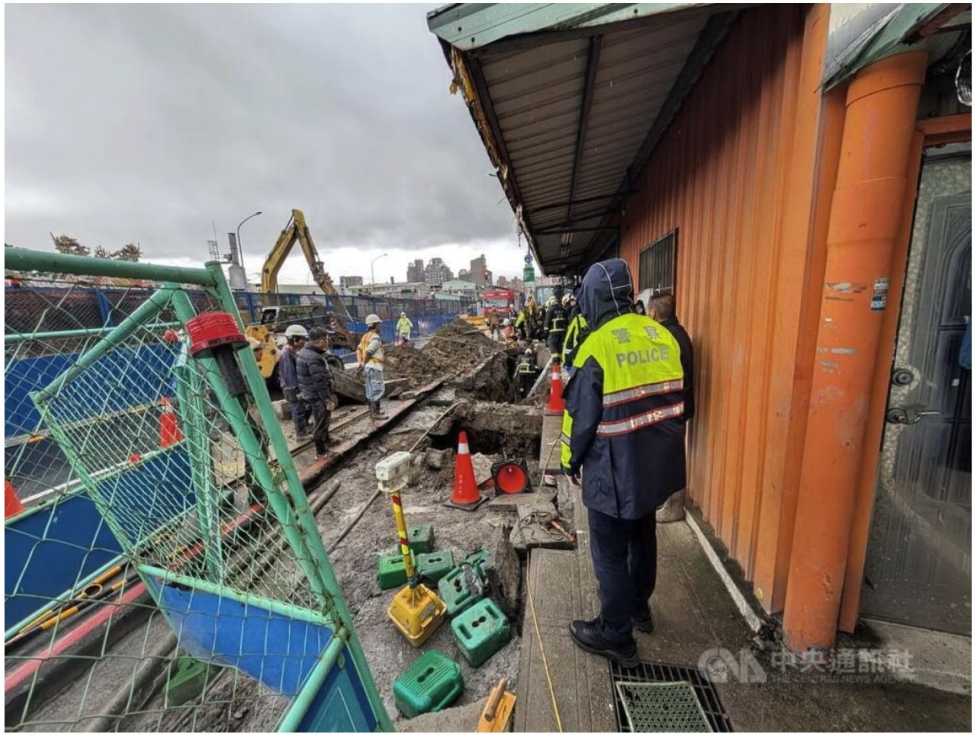
Low pay, night shifts lead nurses to quit hospitals and seek other employment

Oct. 11, 2023 09:40

https://www.taiwannews.com.tw/topic/labor%20shortage

新北樹林污水下水道工程坍方 1人壓傷送醫不治

2025/3/6 15:36（3/7 11:48 更新）



新北市水利局辦理樹林區大同路污水下水道工程修繕作業時，5日中午發生工地土石坍方，砸死1名工人，勞工局、水利局將釐清肇事原因與責任。（翻攝畫面）中央社記者黃旭昇新北市傳真 114年3月5日

The caregiver shortage and its dilemma

Focused Areas

Home Care

High-Risk Field Inspection

Home Care

Robot Credit: Kinova, Hello Robot, Amazon

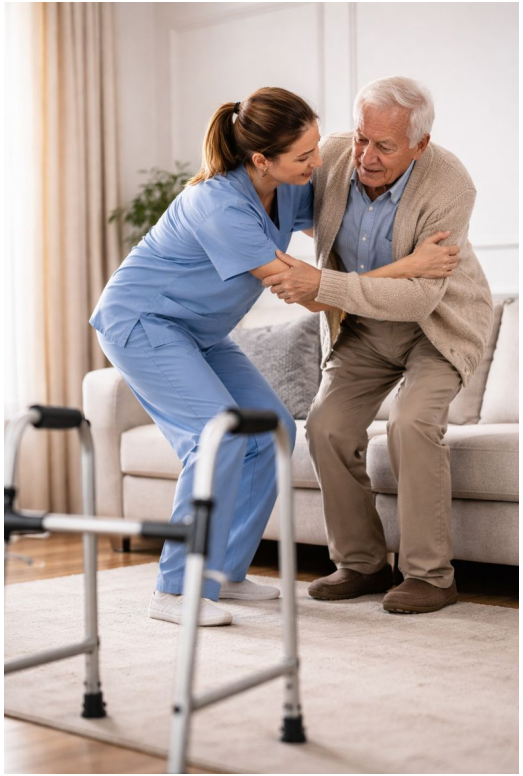
Aging in Place

- “The goal of aging-in-place is to postpone or even obviate the need for older adults to transition to nursing facilities, while reducing reliance on hard-to-find professional care providers and promoting the well-being of family caregivers.” [1]

- Objectives:
  - **Emphasize** the integration of technology into daily life
  - **Reduce** the caregiving burden
  - **Promote** health and independent living
  - **Enhance** social participation and connection

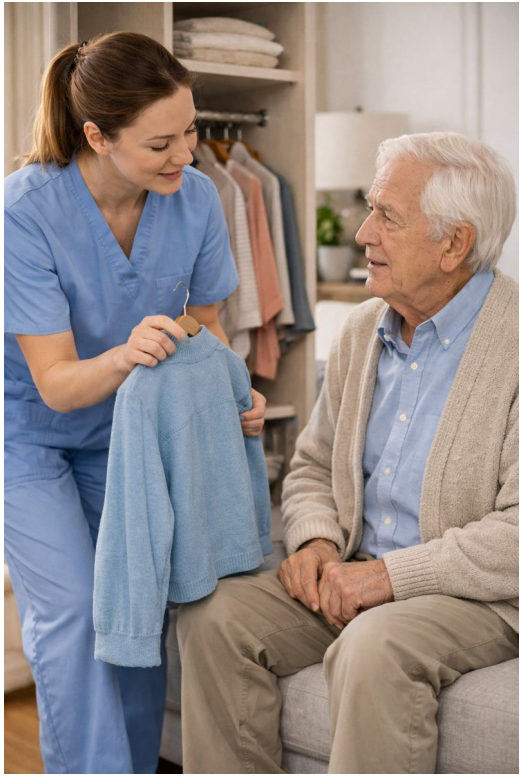
[1] A Roadmap for US Robotics - Robotics for a Better Tomorrow, 2024

Physical Support



Smart Two-Wheeled Walker

Medication Delivery and Intake



Deliver Cloths

Credit: ChatGPT

“The workload on human caregivers is reduced, and the work can be focused on functions that humans are both more motivated to provide and better able to provide.”

A Roadmap for US Robotics - Robotics for a Better Tomorrow, 2024

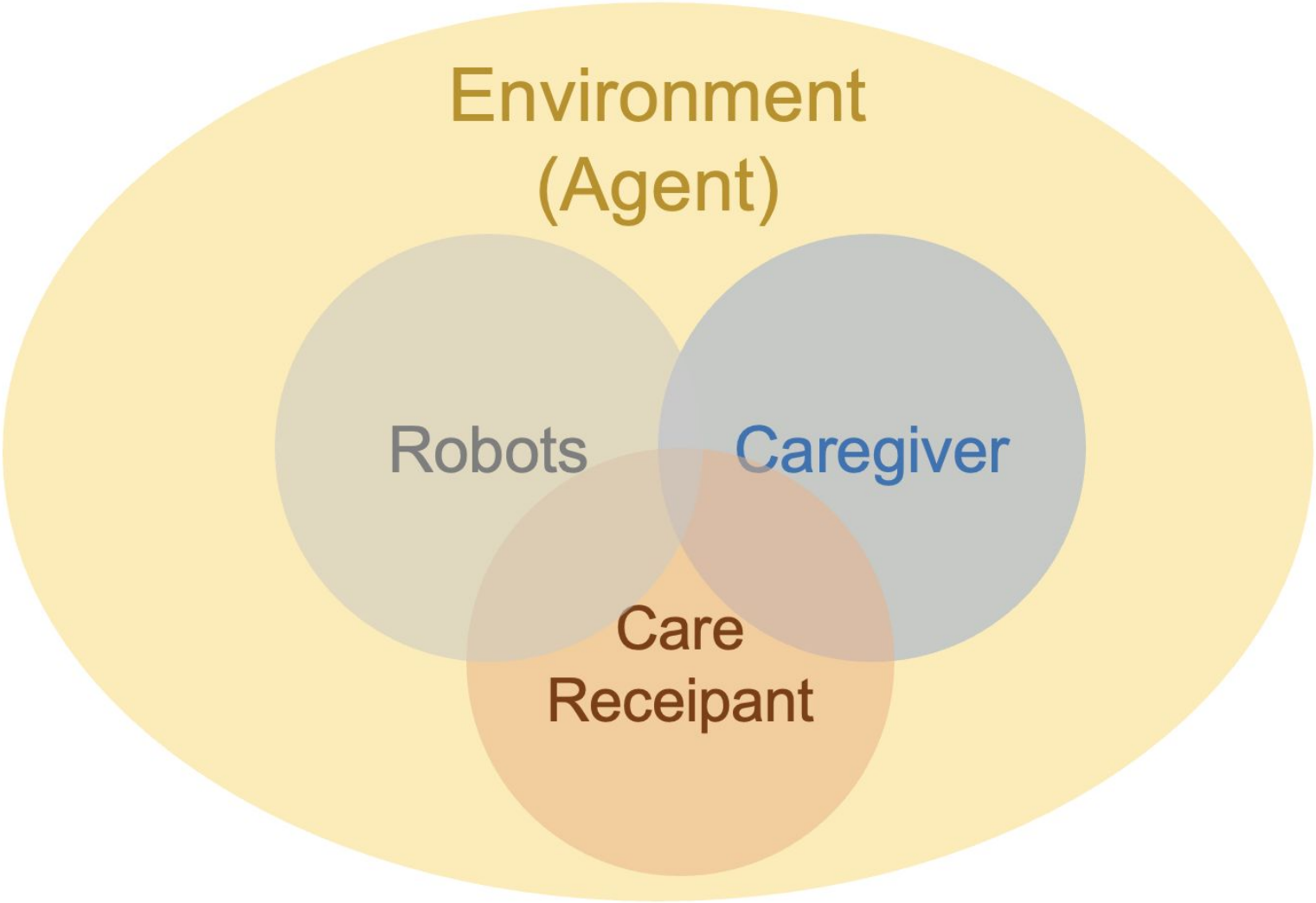
The notion of “ROBOT” can be more than physical entities

Capacity Command Center

Improving Efficiency and Patient Care

https://shorturl.at/hulBj

https://shorturl.at/rER3X


Environment
(Agent)
Robots
Caregiver
Care
Receipant

Real World Testing Fields

Digital Twin

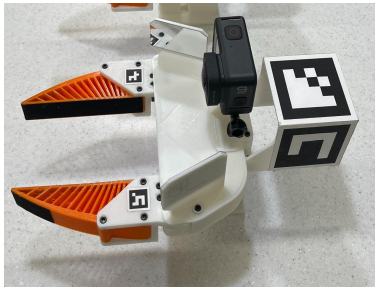
Hardware

OpenArm

I2RT

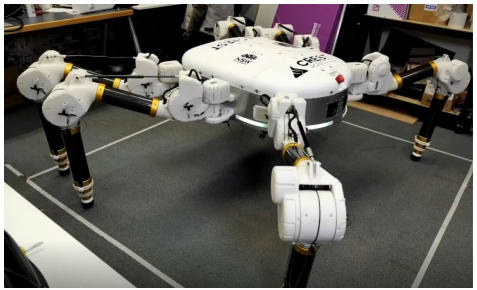
Tesollo Inc.

Haptics Device

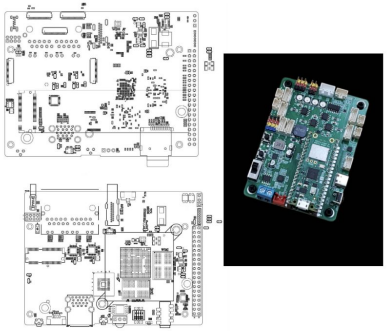


teleoperator

Mobile Manipulation

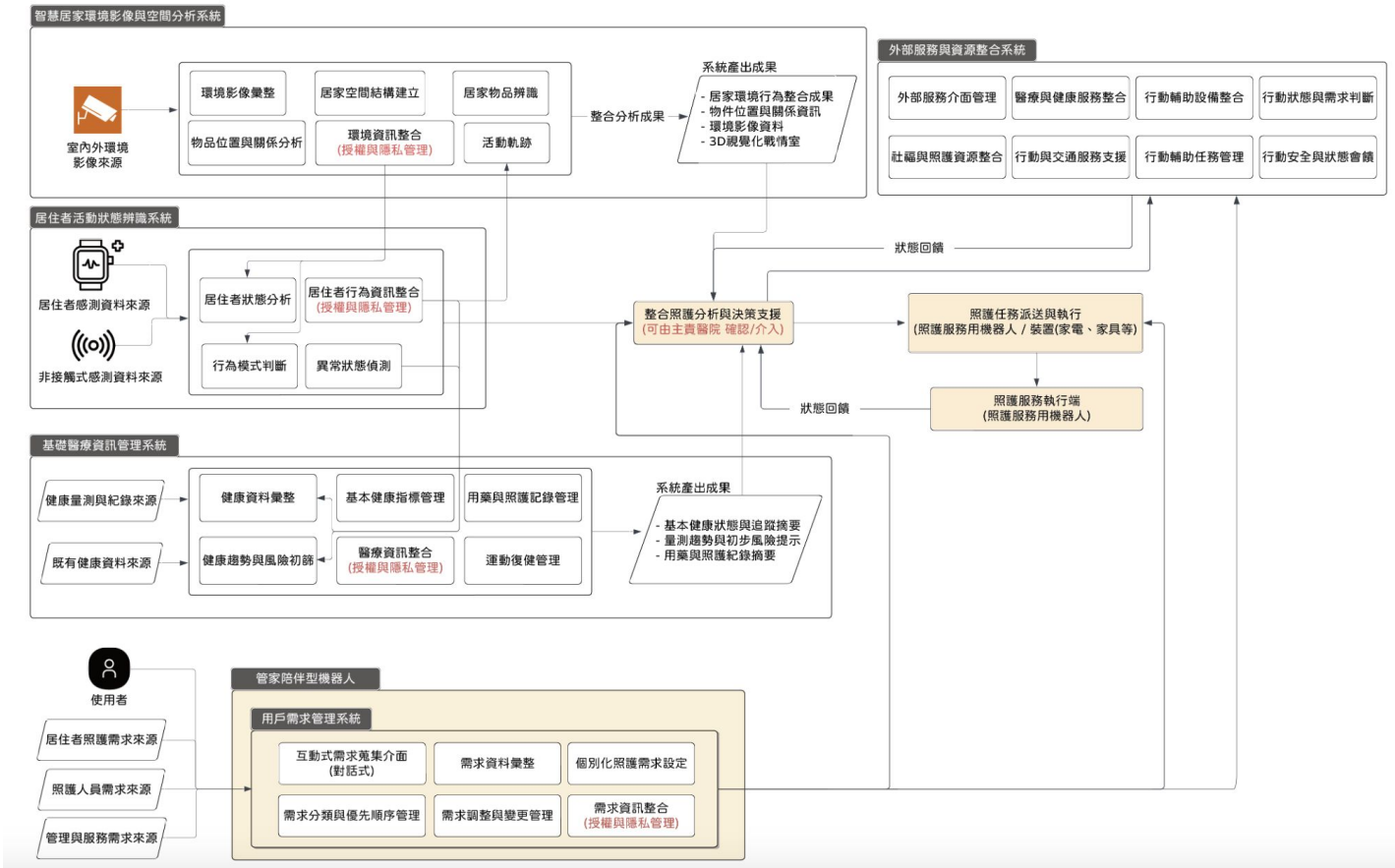


Legged Robot



Edge Computing

Reference Aging-in-Place Software Architecture



Validate Solutions in NCAIR

國科會工程處115年度「智慧醫療關鍵技術研發專案計畫」徵求公告

徵求單位	工程處	**徵求階段**	計畫書
計畫類別	學術研究	**計畫領域**	工程技術
主題名稱	國科會工程處115年度「智慧醫療關鍵技術研發專案計畫」徵求公告		
徵求期間	114年12月31日至115年2月26日		
計畫經費	經費補助項目依本會補助專題研究計畫作業要點規定辦理，並依審查結果決定補助金額。		
補助期程	115年6月1日起，依審查結果決定補助期程。		
計畫重點	本計畫以臨床需求為出發點，善用產業現有產品及服務平台，發展智慧醫療關鍵技術，選定具有前瞻性、創新性及應用性之在宅照護、在宅住院、AI軟體輔助及數據分析、健康生活評估等4項研究主題。並運用AI、資通訊和醫療科技，串接場域驗證與擴散，強化技術落地於醫院、長照機構、家庭，推動科技進入社區，確保醫療可及性與資源均衡，提升國民健康福祉。 申請人研提之計畫內容必須符合本計畫所列研究重點，詳請參閱徵案公告與相關附件1，2。		

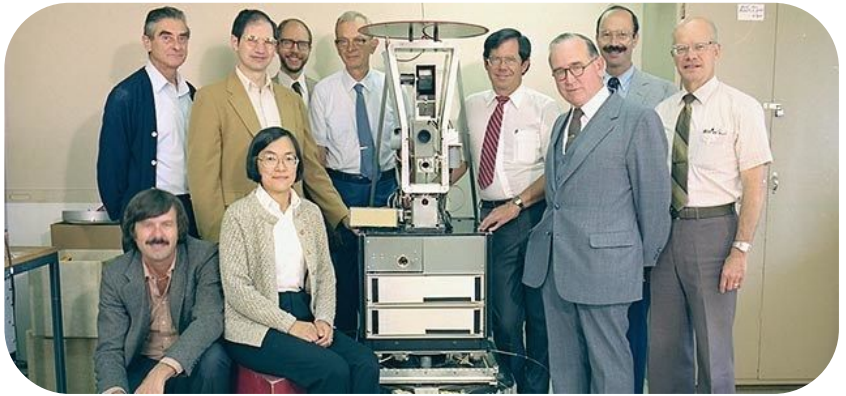
生命科學研究發展處

115年度「發展在宅醫療多元創新科技計畫」徵求公告

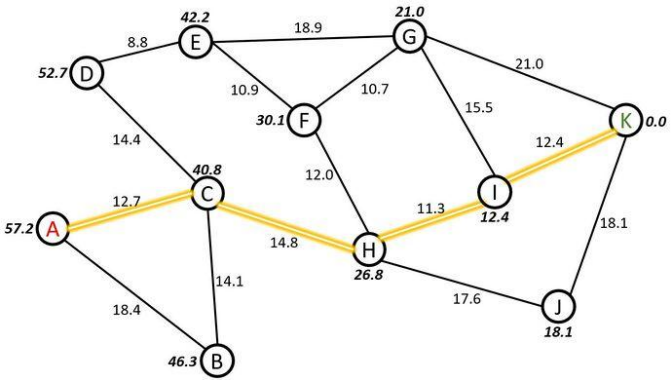
本計畫以篩選適用於在宅醫療的疾病類別為目標，從診所及地區醫院出發，醫學中心參與，聚焦不同在宅醫療疾病的需求，透過產學研醫合作，推動智慧醫療科技創新研發及跨領域系統整合，以加速產品落地應用、拓展服務面向，提升基層醫護服務量能。

Shakey the Robot (1966-1972)

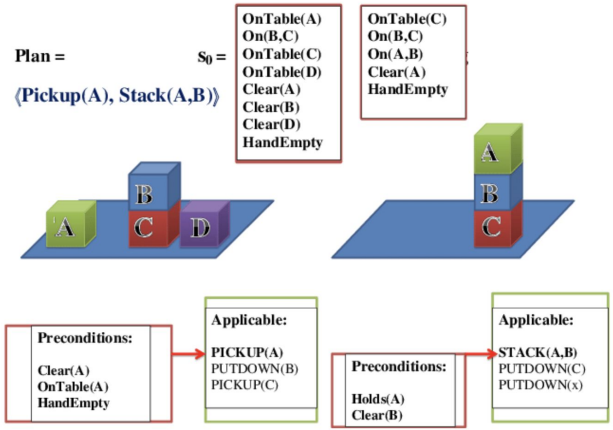
Fig. 8.1 Shakey (courtesy sri.com)



https://www.cs.cmu.edu/~reids/papers/Robot_Architectures.pdf



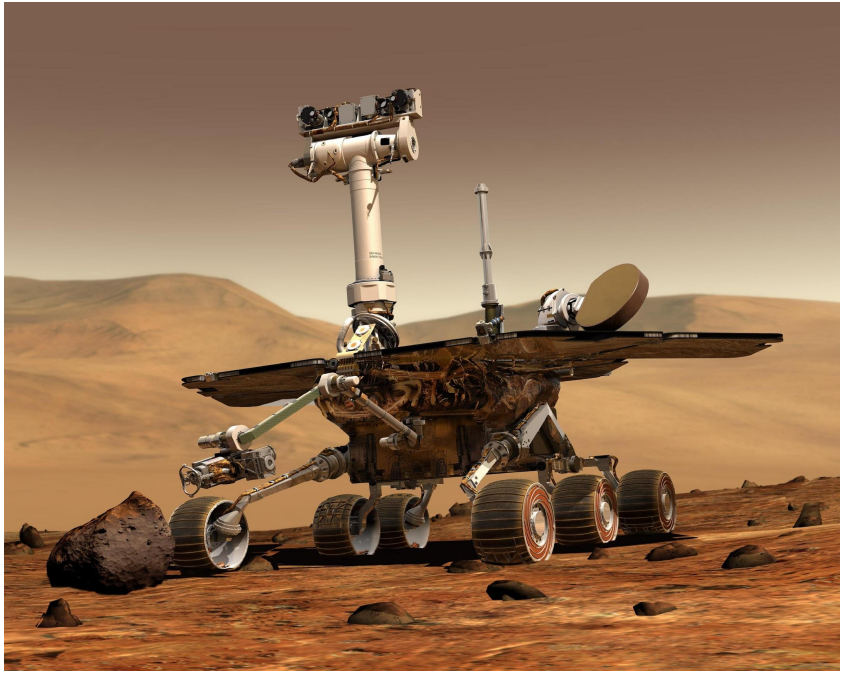
A* Search



STRIPS

Fig. 8.2 The sense–plan–act (SPA) paradigm (after [8.3], with permission)

https://www.cs.cmu.edu/~reids/papers/Robot_Architectures.pdf



國家實驗研究院
NATIONAL INSTITUTES OF APPLIED RESEARCH

NSTC 國家科學及技術委員會
National Science and Technology Council

Thank You!

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