Grant agreement No: 101017008

Harmony

Assistive robots for healthcare

Enhancing Healthcare with Assistive Robotic Mobile Manipulation

(HARMONY) | H2020-ICT-2018-20| RIA

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Revision History

Version	Date	Author(s)	Comments
0.1	22.03.2021	Jen Jen Chung	Draft
0.2	31.03.2021	Jen Jen Chung	Clarified scientific publication venues
1.0	20.04.2021	Paulo Arvito	Reviewed

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Summary

The goal of Harmony is to develop mobile manipulation robots for assistive healthcare applications. We have identified several stakeholder groups across academia, industry and the general public who stand to benefit from the technologies and data generated in the project. Thus, a primary requirement of the project is to share information about our ongoing activities with this community.

This report states our main communication and dissemination objectives and provides a summary of the planned activities that will facilitate reaching those objectives. Here we define *communication* as sharing information with the general public, while *dissemination* targets the scientific community, the healthcare industry as well as other industries that stand to benefit from Harmony technology. Broad-scale communication will primarily be conducted through the project website and various social media. However, we also describe plans to conduct market outreach and education outreach. Our main dissemination channel will be via open access scientific publications. However, we also plan to disseminate project results via industry events, in particular, those organised by the robotics Digital Innovation Hubs.

Communication and Dissemination Objectives

Harmony aims to develop robotic mobile manipulation technology with the primary application in assistive healthcare. Thus, the overarching goal of our communication and dissemination activities is to engage in outreach initiatives toward the scientific community, wider industry, standards organisations and the general public to foster technology awareness and acceptance. This can be broken down into the following objectives:

- Create awareness in the general public of robotic mobile manipulation capabilities and limitations
- Educate stakeholders and end users on the risks and benefits provided by Harmony technology
- Assist in developing standards and guidelines for the use of robotic mobile manipulators in human-centred environments

Communication Plan

Harmony communication activities are targeted at sharing project information with the general public and wider community. As such, we will use readily accessible channels available via the web, as well as through public events hosted by consortium partners and euRobotics (e.g. European Researchers' Night, Scientifica, European Robotics Forum). Harmony already has a distinct visual identity, and this will be used consistently across all of our communication material to generate and maintain strong brand recognition.

Website and social media presence

- Harmony website (https://harmony-eu.org): The website will be the main information portal for the project. Apart from a description of the project and the consortium partners, all publicly releasable information will be made available on the website. This includes project deliverables, scientific papers, datasets, code, etc. News of the latest project activities will also be regularly posted on the website.

- Twitter account (@eu_harmony): As a complement to the website, we will run a Twitter account to be used by the consortium. Project activities and results will be advertised over Twitter, redirecting readers to the project website for more details.

- Youtube channel (Harmony EU project): Videos highlighting Harmony technology demonstrations will be uploaded to the project Youtube channel. In addition, we will also create playlists linking videos of research results from the Harmony partners.

Market outreach and promotion

- Live demonstrations: We will coordinate with our end user partners to announce any live demonstrations on site at USZ or KUH. Special focus will be placed on communicating with general stakeholders, i.e. patients, visitors and staff at the hospitals where we will host our demonstrations. The partners have a long

experience in communication and scientific popularisation. Communication will also build on the visibility and communication channels of the individual partners.

- Industry events: Harmony will be represented through booths and presentations in trade fairs and other events selected for their relevance with regard to robotics or digital healthcare, such as the ERF.

- Press releases: The responsible partners will write and distribute press releases covering important news and achievements of Harmony. This will leverage the media and outreach channels of the individual partners. Articles will be recirculated via the Harmony website and Twitter channels.

Educational outreach

- Educational events: We will organise several student workshops aimed at K-12 students as well as hack-a-thons aimed at tertiary level students. These events will be themed according to the technology modules developed in Harmony, with the particular technology focus chosen by the host partner. We will also organise summer/winter schools on the topic of Robotic Mobile Manipulation targeted at Master's and PhD students in robotics across Europe in which Harmony PIs will give lectures on their area of expertise.

- Public events: All consortium partners will participate in showcasing Harmony during the annual European Researchers' Night and other open lab days hosted by their institutions. ETHZ and USZ will also participate in the biennial Scientifica: Zürich Science Days [1].

Dissemination Plan

Harmony dissemination activities are targeted at sharing project results with the scientific community, the healthcare industry as well as other industries that stand to benefit from robotic mobile manipulation technology. We will publish our results to relevant and high impact scientific conferences and journals, as well as organise workshops and seminars for mixed academic and industry audiences. We will also leverage the networks set up by the robotics Digital Innovation Hubs (DIH-HERO [2], DIH^2 [3], Trinity [4], RIMA [5], agROBOfood [6]) to disseminate project outcomes to the wider industry.

- Scientific Publications: All technical details about the methods and technology developed in Harmony will be public. The documents will be in the form of scientific papers that will be published at top-tier peer-reviewed conferences and journals, e.g.
    - IEEE International Conference on Robotics and Automation (ICRA)
    - IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
    - Robotics: Science and Systems (RSS)
    - ACM/IEEE International Conference on Human-Robot Interaction (HRI)
    - IEEE Robotics and Automation Letters (RAL)

- International Journal of Robotics Research (IJRR)
- IEEE Transactions on Robotics (TRO)
- Autonomous Robots (AURO)
- Science Robotics (SciRob)

All material will be made available on the project website. We will follow the "green" open access strategy by publishing preprints of scientific papers in arXiv.

- Dataset Publication: Representative portions of the data that we produce in Harmony will be made public to set up new benchmarks that can benefit other researchers and drive innovation. For example, we would like to develop a benchmarking dataset for multimodal object reconstruction, as well as human grasping and manipulation datasets for learning from demonstration purposes. Given the nature of the data collected (multimodal measurements of common objects, and expert training data for manipulation), there is tremendous potential for it to be used by scientists to produce new findings in robotic perception, navigation, learning and control.

- Software Releases: The academic members of the consortium are actively involved in releasing open-source software based on their scientific research with continued exploitation of prior research results. This strategy will be maintained in Harmony.

- Scientific Events: Workshops organised in conjunction with major robotics conferences (e.g. ICRA, IROS, RSS, HRI) are an excellent opportunity to invite international experts from academia and industry to share ideas and discuss work in progress. In addition to these, we will also organise smaller scale seminars during our all-hands meetings where we invite talks from experts at the host partner institution.

- Industry Events: As the main Digital Innovation Hub for Harmony, we are in contact with DIH-HERO and will participate in the brokerage and networking events that they host. This will allow us to connect with other healthcare professionals and SMEs who are interested in assistive robots for healthcare. We will also use this channel to collaborate on efforts to develop standards and guidelines for mobile manipulation technologies for use in healthcare.

Conclusions

The communication and dissemination plan is intended to be a living document. We will continue to revisit and revise this plan as the project progresses and new opportunities arise for connecting with relevant stakeholders. As a minimum, the Steering Committee will discuss the communication and dissemination plan at each meeting (once every 6 months) and make updates and modifications as needed.

References

[1] ETH Zürich and Universität Zürich, “Scientifica: Zürcher Wissenschaftstage,” https://www.scientifica.ch, accessed 22.03.2021.

[2] DIH-HERO, “Digital Innovation hubs in Healthcare Robotics,” https://dih-hero.eu, accessed 22.03.2021.

[3] DIH^2, “We accelerate factories through robotics | DIH^2,” http://www.dih-squared.eu, accessed 22.03.2021.

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[6] agROBOfood, “Connecting Robotic Technologies with the Agrifood Sector,” https://agrobofood.eu, accessed 22.03.2021.