DigiHealth-Asia

"Capacity Building for Digital Health Monitoring and Care Systems in Asia"

Newsletter 1

January 24, 2023

The aim of the newsletter is to disseminate the project information and developments based on the communications and networking of partner universities of Europe and Asia.

UNIVERSITEIT GENT

University of HUDDERSFIELD
Inspiring global professionals

Northumbria University NEWCASTLE

Capital University of Science & Technology CUST Pakistan

NATIONAL UNIVERSITY OF SCIENCES & TECHNOLOGY PAKISTAN

Attanam Damayuti Pandita CHIANG MAI UNIVERSITY 1964

มหาวิทยาลัยแม่ฟ้าหลวง
MAE FAH LUANG UNIVERSITY

MNUMS
Mongolian National University of Medical Sciences
1942

NATIONAL UNIVERSITY OF MONGOLIA 1942

université lumière lyon 2

Overview of the project

"Capacity Building for Digital Health Monitoring and Care Systems in Asia", (DigiHealth-Asia) is designed to be implemented within a three-year project under EAC-A02-2019-Capacity Building in the field of Capacity Building for Higher Education (CBHE). The focus is to develop and implement digital health courses in three different partners higher education institutions (HEIs) in Pakistan, Thailand, and Mongolia. This multi-country curriculum development project will develop short-cycle (vocational) and Master level digital healthcare courses. Quality Plan is developed in the scope of the WP-5 (Management) of the project in compliance with the project description and meeting all the applicable rules and guidelines. The main objectives of the project are:

1. To build capacity in partner HEIs with an aim to develop expertise that would modernize healthcare systems by using digital technologies for health care in assisted living.
2. To develop an education and training programs aiming to enhance skills of healthcare practitioners in use of digital and ICT based patient monitoring and assistive technologies.
3. To create a sustainable network of healthcare practitioners, researchers, academic teaching staff, researchers, and industry professionals, focusing on the development of digital technologies for healthcare.

Launch of DigiHealth Asia Project

The Kick-off meeting of the ERASMUS+ DigiHealth-Asia project was conducted online via Zoom. Asian partner countries organized for launching online workshops/meetings locally too. The main objective was to discuss the project roadmap and strategy to achieve project work packages to ensure sustainable and quality implementation of innovative teaching and learning approaches. At the opening ceremony of the project, governmental officials from concerned ministries, EU representatives, HE institutions'

management, and health professionals were invited in the case of Mongolia. During the meeting, partners shared their experiences and competencies, and objectives, methods, and activities related to the project were discussed. The project work packages were presented, and the partners agreed about the distribution of tasks among them and suggested that sustainability be considered as a work package that needs to be implemented. Throughout the project, experts and professionals from European universities are going to coordinate and support the integration of Artificial Intelligence, Embedded systems, and the Internet of Things into practical applications by creating a graduate training curriculum at the master level and implementing pilot cases at each Asian partner countries: Thailand, Pakistan, and Mongolia.

What are ongoing
Pilot Cases:

During the project, the Asian partner institutions from Thailand, Pakistan, and Mongolia will be working on pilot cases for remote monitoring of mobility disorder patients, remote monitoring of cardiovascular patients and remote consultation of patients, respectively. Asian partners will be assisted by the European partners to achieve the project milestones.

The partners agreed on the following distribution of the topics:
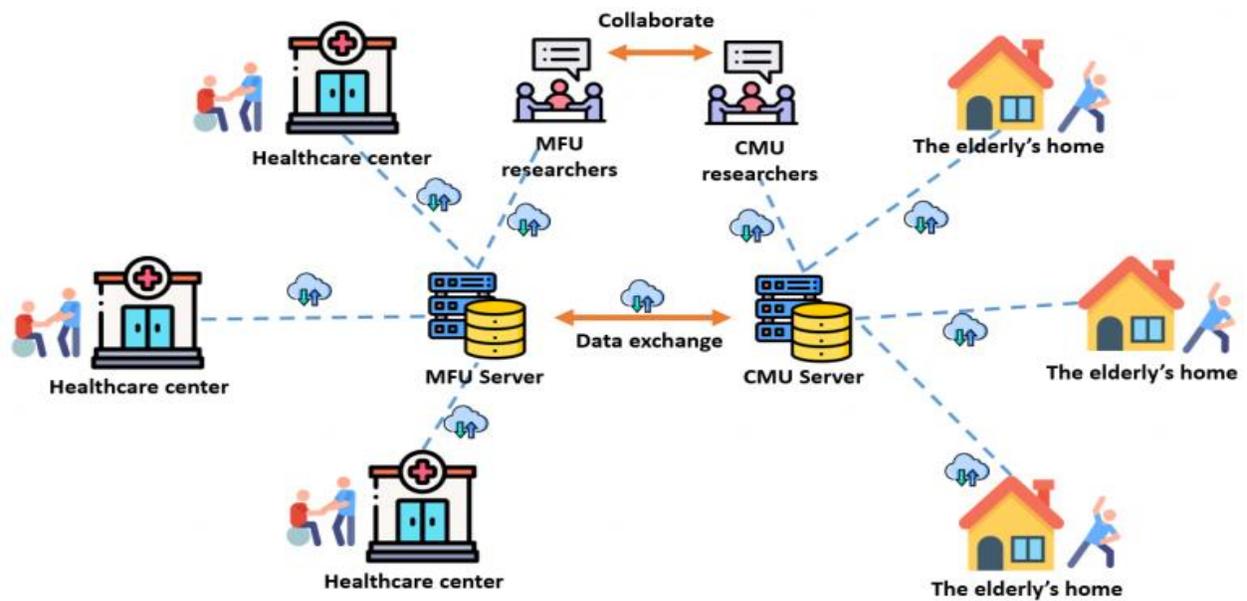
University of Ghent (UGent), - Coordinator

Pilot Case	European Coordinator	Asian Partner HEI
Remote monitoring of cardiovascular patients	UGent, UoH	CUST, NUST

Remote monitoring of mobility disorder patients	UNN	CMU, MFU
Remote consultation of patients	ULL	NUM, MNUMS

University of Ghent (UGent)

University of Northumbria at Newcastle **(UNN)**

University of Huddersfield **(UoH)**

Capital University of Science and Technology **(CUST)**

University Lumière Lyon 2 **(ULL)**

National University of Sciences and Technology **(NUST)**

Chiang Mai University **(CMU)**

Mongolian National University of Medical Sciences **(MNUMS)**

Mae Fah Luang University **(MFU)**

National University of Mongolia **(NUM)**

Each Asian partner has proposed an architecture for the implementation of their assigned pilot case.
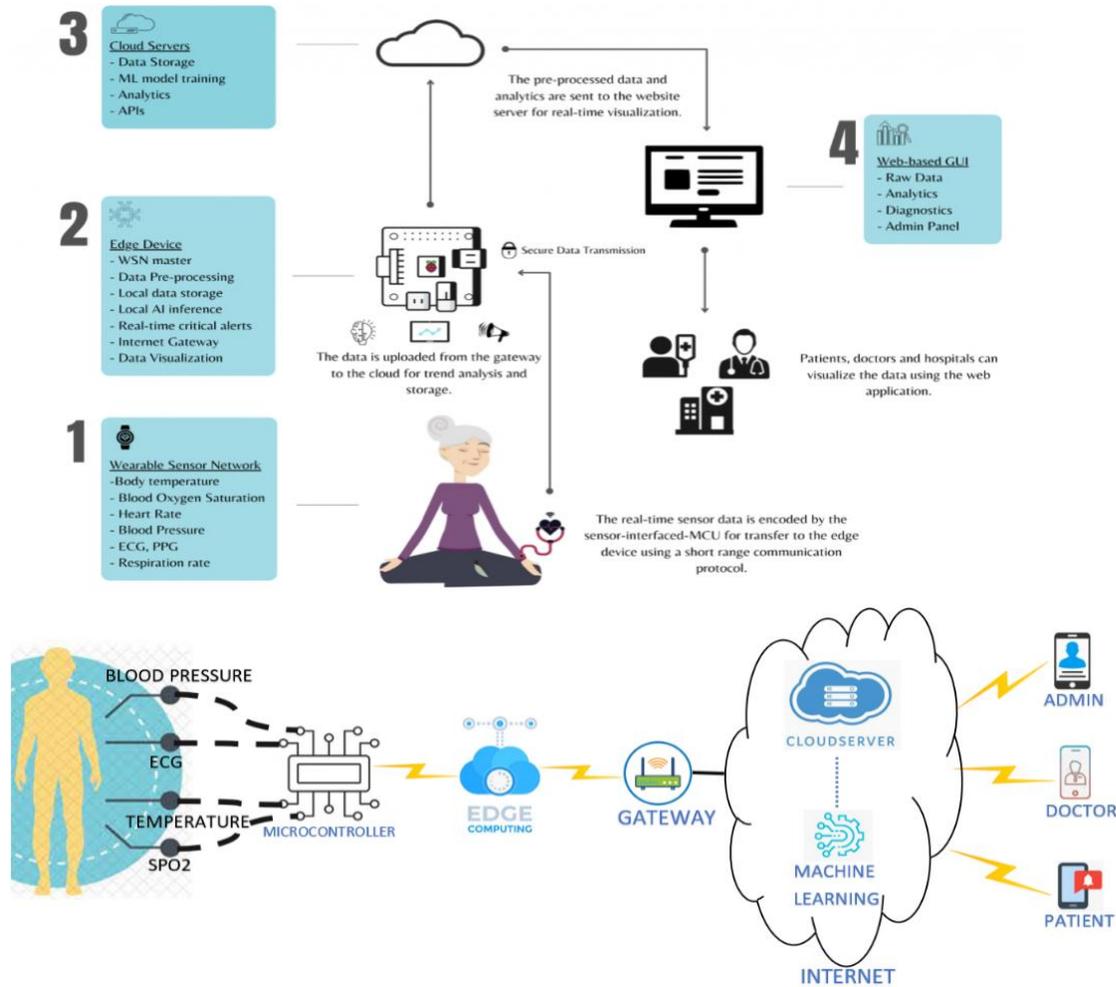
1. Thailand (Remote monitoring of mobility disorder patients)
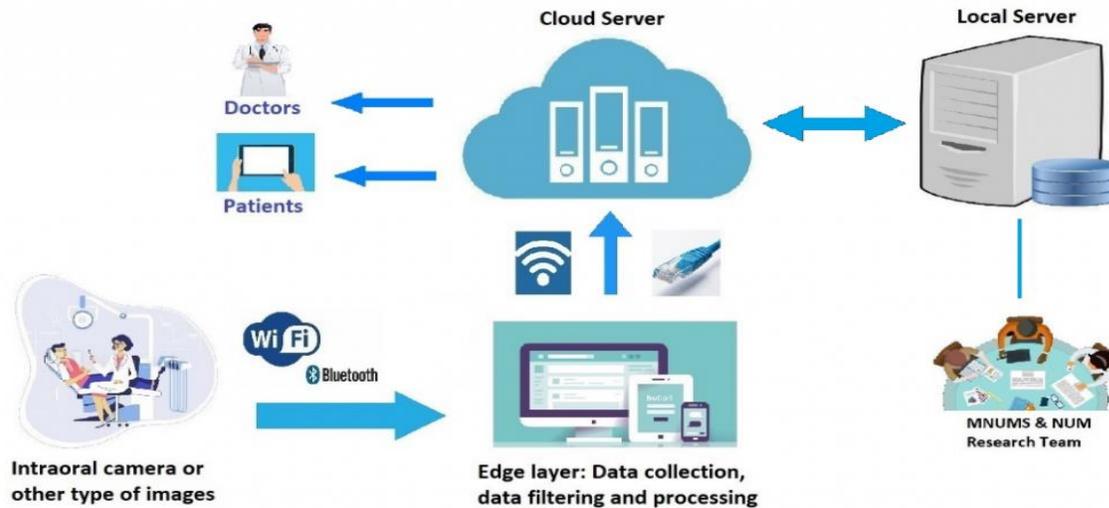
CMU and MFU proposed architecture

2. Pakistan (Remote monitoring of cardiovascular patients)

NUST and CUST proposed architecture.

3. Mongolia (Remote consultation of patients)

NUM and MNUMS proposed architecture

Specialization courses:

These pilot cases will be used in the specialized courses such as IoT for healthcare, AI/ML for healthcare, and embedded systems for healthcare that will be commenced within the project duration at the partner universities in Pakistan, Thailand, and Mongolia. The list of courses assign to each Asian partner HEIs is given below

- ## Thailand

CMU

1) Internet of Things for Digital Business (Compulsory) [3 Credits],

2) Artificial Intelligence for Digital Business (Compulsory) [3 Credits],

3) Digital Transformation (Compulsory) [3 Credits],

4) Thesis [18 Credits]

MFU

MSc in IT (revising program's curriculum):

1) IoT for healthcare (Optional) =3 US credits

2) AI/ML for healthcare (Compulsory) =3 US credits

3) Embedded systems for healthcare (Optional) =3 US credits

4) Thesis =12 US credits / Independent Study =6 US credits (Titled on Healthcare Innovation)

• Pakistan

CUST

1) IoT for healthcare (Optional),

2) AI/ML for healthcare (Optional),

3) Embedded systems for healthcare (Optional),

4) Thesis

NUST

1) IoT (Optional),

2) AI for healthcare (Optional),

3) Thesis

• Mongolia

NUM

1) IoT for healthcare (Optional),

2) AI/ML for healthcare (Optional),

3) Embedded systems for healthcare (Optional)

4) Thesis

MNUMS

1) IoT for healthcare (Optional),

2) AI/ML for healthcare (Optional),

3) Embedded systems for healthcare (Optional)

4) Thesis

NOTE:

Further details about the pilot cases are available at:

https://digihealth-asia.eu/index.php/pilot-cases/

And details about the related specialized courses are available at:

https://digihealth-asia.eu/index.php/specialized-courses/

What we have completed

DigiHealth -Asia: Conferences/Workshops/Meetings
The 1st Plenary Meeting at the University of Ghent, Belgium between 22-26 August 2022

DigiHealth-Asia aims to build capacity in Higher Education Institutes of the partner countries in Pakistan, Thailand, and Mongolia to develop project-based courses in digital health and implement pilot cases specific to each Asian countries' health issues. The Project Coordinator (Ghent University, Belgium) and European (Northumbria University of Newcastle, UK; University of Huddersfield, UK; University Lyon 2, France) partners shared ongoing statuses and further actions to be taken within the project framework. Both European and Asian Partners (Capital University of Science and Technology, Pakistan; National University of Science and Technology, Pakistan; Chiang Mai University, Thailand; Mae Fah Luang University, Thailand; Mongolian National University of Medical Sciences, Mongolia and the National University of Mongolia, Mongolia) actively participated in the discussion and exchanged their ideas.

Meeting in a photo glance

Conferences/workshops/seminars

Conference topic: MNUMS and NUM 5th hybrid workshop on joint curriculum development

Place: School of Biomedicine, Mongolian National University of Medical Sciences **Date:** 16 June 2022 Thursday **Presenter:**

Prof. Mend-Amar Majig (National University of Mongolia –Digihealth Local Manager)

Participants:

MNUMS: Prof. Amarsaikhan Bazar- School of Dentistry, Dr. Purevdolgor- Head of Bioinformatic Department, Dr. Javzmaa – Lecturer, Bioinformatic Department, Dr. Khongorzul S. - Officer, Division of Educational Policy and Management, Assoc. Prof. Ariuntuul Garidkhuu- Digi health local manager);   **NUM:** Assoc. Prof. Mend-Amar Majig PhD, Department of Applied Mathematics and Assoc. Prof. Battur B. PhD, Department of Applied Mathematics

Conference topic: On May 7, 2022, Chiang Mai University hosted its first National Conference on Digital Innovation and Transformation

Location: Digital Economy Promotion Agency (depa) office, Chiang Mai, Thailand

Date: 7 May 2022

Event: 1st National Conference on Digital Innovation & Transformation and Erasmus Project Talks. At depa, Chiang Mai Thailand.

On May 7, 2022, Chiang Mai University hosted its first National Conference on Digital Innovation & Transformation. The day began with all participants registering and taking the mandatory ATK test required by the COVID-19 safety regulation. The objective of Digihealth project, Co-funded by the Erasmus+ Programme of the European Union The goal is to collaborate with European and Asian partners to create a specialized price-based graduate course in artificial intelligence. DigiHealth-Asia will help the elderly by developing self-monitoring and diagnostic tools that will improve their quality of life through the use of sensors and machine learning technologies. The project's primary objective is to harness the power of ICT in healthcare by introducing digital healthcare specialized courses that would train and assist healthcare professionals in remote patient monitoring. The event was a huge success, and it was co-hosted by two other Erasmus+ projects, Central, Capacity building

and ExchaNge towards attaining Technological Research and modernizing Academic Learning and SUNSpACe, Sustainable Development Smart Agriculture Capacity.

Publication List:

1. Qureshi, M. D. M., Cámara, D. P., De Poorter, E., Mumtaz, R., Shahid, A., Moerman, I., & De Waele, T. (2022, May). Multiclass Heartbeat Classification using ECG Signals and Convolutional Neural Networks. In *2022 2nd International Conference on Digital Futures and Transformative Technologies (ICoDT2)* (pp. 1-6). IEEE.

   [Multiclass Heartbeat Classification using ECG Signals and Convolutional Neural Networks](#)

2. N. Raeve, A. Shahid, M. Schepper, E. Poorter, I. Moerman, J. Verhaevert, P. Torre, H. Rogier, "Bluetooth-Low-Energy-Based Fall Detection and Warning System for Elderly People in Nursing Homes", Journal of Sensors, vol. 22, 2022.

   https://downloads.hindawi.com/journals/js/2022/9930681.pdf

3. Z. Ashfaq, R. Mumtaz, A. Rafay, S. Zaidi, H. Saleem, S. Mumtaz, A. Shahid, E. Poorter, I Moerman, "Embedded AI-Based Digi-Healthcare", Applied Sciences, vol. 12, no.1, pp. 519, 2022.

   https://www.mdpi.com/2076-3417/12/1/519

4. R. Y, Khattak, Q. Z. Ahmed, S. Shoaib, M. Hafeez, "Array Antenna for Wireless Access Points and Futuristic Healthcare Devices", *Electronics* **2022**, *11*, 1226.
   https://doi.org/10.3390/electronics11081226

   https://www.mdpi.com/2079-9292/11/8/1226

DigiHealth - Asia   Member List

1. University of Ghent, Belgium (coordinator)

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Eli De Poorter

Timo De Waele

Daniel Peralta Cámara

2. University of Northumbria at Newcastle, UK

Nauman Aslam

Xiaomin Chen

3. University of Huddersfield, UK

Qasim Zeeshan Ahmed

Maryam Hafeez

Waqas Bin Abbas

4. Lumière University Lyon 2, France

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Chantal Bonner Cherifi

Néjib Moalla

Yacine Ouzrout

Giacomo Kahn

5. Capital University of Science and Technology, Pakistan

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Mammona Qudsia

Fahim Shahzad

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Syed Mohammad Hassan Zaidi

7. Chiang Mai University, Thailand

Pradorn Sureephong

Suepphong Chernbumroong

Faranaaz Moolajee

Suwit Wongsila

8. Mae Fah Luang University, Thailand

Punnarumol Temdee

Worasak Rueangsirarak

Surapong Uttama

Chatchada Sutalangka

Teeravisit Laohapensaeng

Roungsan Chaisricharoen

9. Mongolian National University of Medical Sciences, Mongolia

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Amarsaikhan Bazar

Damdindorj Boldbaatar

Tselmuun Chinzorig

Khongorzul Samdankhuu

Bat-Erdene Myagmar

10. National University of Mongolia, Mongolia

Mend-Amar Majig

Purevtsogt Nugjgar