SAFE-RH

Co-funded by the Erasmus+ Programme of the European Union

Mobility Report

Prof. Ehsan Ullah Munir
Visit of University of Lorraine
November 12 – 19, 2023

- **Name of the Participant:** Ehsan Ullah Munir
- **Affiliation:** COMSATS University Islamabad, Pakistan
- **Host Institution:** University of Lorraine
- **Visit Dates:** November 12-19, 2023
- **Title of Project:** Sensing, Artificial Intelligence and Edge Networking towards Rural Health Monitoring (SAFE-RH)
- **Erasmus+ Project Reference Number:** 619483-EPP-1-2020-1-UK-EPPKA2-CBHE-JP

I had the privilege of visiting the University of Lorraine, France, to participate in the training and project meeting for the SAFE-RH project. As the lead of the project team, I was responsible for overseeing the overall progress and deliverables on behalf of CUI.

The project meeting commenced on November 12, 2023, with a warm welcome from Dr. Hassan Rabah. During the session, I presented a comprehensive update on the project's progress, including the status of key deliverables.

An in-depth discussion on the current status of the Fetus Monitoring Belt was discussed. I provided updates on its ongoing testing, informing the team that it has been successfully integrated with the Management Information System (MIS) and that the testing process is underway. Additionally, the matter related to delays in the delivery of specific sensors, and explored potential solutions to resolve these issues.

Another major task on part of CUI is the development of the mobile app. It was informed that the app has been developed and is currently in the testing phase. However, suggestions were made to further enhance its functionality by adding features for monitoring vital signs and generating detailed health reports, which would improve its overall usability and impact.

All partner institutions involved in the project—University of the West of Scotland, Capital University of Science and Technology, Islamia University Bahawalpur, and the host institution, University of Lorraine—actively participated in the meeting. The CUI team played a key role in the discussions, offering valuable feedback on the various hardware devices and software modules developed by the partner institutions to ensure the project's objectives are successfully met.

The CUI team also held a detailed meeting with Prof. Naeem Ramzan and Dr. Hassan Rabah to discuss the possibility of publishing research papers in reputable journals. Both Prof. Ramzan and Dr. Hassan provided insightful suggestions for improving the draft papers to increase their chances of acceptance.

Additionally, the project budget utilization was also discussed with Prof. Naeem Ramzan. The visit was highly productive, yielding essential feedback that will contribute to the improvement of the hardware devices and software modules developed as part of the project.

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Mobility Report

Dr. Tassawar Iqbal
Visit of University of Lorraine, France
November 12 – 19, 2023

- **Name of the Participant:** Tassawar Iqbal
- **Affiliation:** COMSATS University Islamabad, Pakistan
- **Host Institution:** University of Lorraine, France
- **Visit Dates:** November 12-19, 2023
- **Title of Project:** Sensing, Artificial Intelligence and Edge Networking towards Rural Health Monitoring (SAFE-RH)
- **Erasmus+ Project Reference Number:** 619483-EPP-1-2020-1-UK-EPPKA2-CBHE-JP

I participated in the SAFE-RH meeting and training session at the University of Lorraine, France, from November 12 to November 19, 2023, as a key member of the project team. This event provided a platform to present, evaluate, and discuss the project's overall progress, challenges, and key deliverables.

During the meeting, I delivered two significant presentations focusing on the following key aspects of the project:

1. **Monitoring of Maternal and Infant Health Pilot**:
   I provided updates on the ongoing pilot project, which aims to monitor maternal and infant health using advanced technology. Additionally, I outlined the various challenges faced during the development of the *Fetus Monitoring Belt*, particularly highlighting the need for specific sensors to proceed with the creation of an additional prototype. I further informed the attendees that discussions were held with all partner institutions regarding the testing of the Fetus Monitoring Belt in Pakistan. The team from the Islamia University of Bahawalpur (IUB) took the initiative to arrange for testing at local Basic Health Units (BHUs) in Bahawalpur, ensuring that the device could be tested in a real-world healthcare environment. During the visit various a detailed working was held with the partner institutions regarding connecting the device with the MIS.
2. **Creation, Updating, and Management of the Project Website and Social Media**:
   I presented our efforts in developing, maintaining, and continuously updating the project's online presence, including the official website.I informed the participants that the website is now fully operational and regularly updated. I also highlighted the various challenges encountered during the development phase and provided solutions to enhance user engagement and information dissemination.

I alongwith Dr. Ehsan, we also presented the updated status of fund utilization and the project budget to Prof. Naeem Ramzan. During the discussion, Prof. Naeem emphasized the importance of utilizing the project budget effectively within the allocated deadlines to avoid any financial discrepancies.

Additionally, I actively assisted the students involved in the project with the installation of all relevant devices for testing and demonstration purposes, ensuring that all technical components were functional for the project’s ongoing research and development activities

Overall, the meeting proved to be highly productive, fostering stronger collaboration with both international and local partners while significantly advancing the objectives of the SAFE-RH project. It provided valuable opportunities for knowledge sharing, problem-solving, and aligning efforts toward achieving the project’s key goals.

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Mobility Report

Dr. Saima Gulzar

Visit of University of the West of Scotland

Nov 12 – 19, 2023

Co-funded by the Erasmus+ Programme of the European Union

Affiliation: COMSATS University Islamabad, Pakistan
Host Institution: University of Lorraine
Mobility Period: Nov 12 – 19, 2023
Title of Project: Sensing, Artificial Intelligence and Edge Networking towards Rural Health Monitoring (SAFE-RH)
Erasmus+ Project Reference Number: 619483-EPP-1-2020-1-UK-EPPKA2-CBHE-JP

1. Introduction

The event organized by the Institute Jean Lamour (IJL) at the University of Lorraine, as part of the SAFE-RH project work package "Development," is scheduled to take place from November 4th to November 19th, 2023, in Nancy, France. This initiative falls under the SAFE-RH project, which is focused on enhancing safety measures within healthcare.

2. Purpose of the Visit

The purpose of my visit was to present my work and progress on remote health monitoring, specifically focusing on fetal health. My contributions align with the SAFE-RH project's aim of improving remote healthcare technologies and access. I presented an initial version of a novel solution for remote fetus health monitoring. I developed a remote fetal movement detection belt which is capable of monitoring fetal activity remotely, alongside a customized Doppler device designed to measure the fetal heart rate.

3. Meeting Highlights

Following is the main highlights of five-day meeting,

I assisted Dr. Ehsan Ullah Munir, the team lead to present the project progress. The focus was to present the project progress of different modules.

I presented the initial version of the remote fetus monitoring belt with my team and discussed different aspects including further suggestions from all project partners. Me and my team provided a practical demonstration of both artifacts that included an initial version of the remote fetus monitoring belt as well as fetus doppler. Dr. Hassan suggested few changes like including some more sensors I the belts. Me and my team worked on those aspects considering how it will help to improve the design.

I assisted Dr. Kashif Ayyub in testing different modules and consoles of the mobile application.

The project team lead Dr. Naeem Ramzan provided guidance on different aspects of mobile application development and testing, Specifically, He also provided his valuable input for the improvements in the development of remote fetus monitoring belt and doppler.

Knowledge Exchange and Networking

During the event, I engaged in meaningful discussions with other project partners and researchers from the University of Lorraine and academics. Key discussions revolved around:

- Integration of remote health monitoring pilots.
- Enhancements in wearable health technologies, especially for maternal care.
- Collaborations for future development of remote fetal health monitoring devices.

5. Outcomes and Future Steps

The following are the outcomes of mobility.

1. The initial version of maternal and fetus health monitoring system was demonstrated and presented to all project partners.
2. Different scenarios of maternal healthcare was also presented that included basic health care and remote sensing.

The following are some future directions given by Dr. Naeem Ramzan and Dr. Hassan Rabah.

1. The improvements in the maternal and fetus belt by including more sensors that are gyroscope and temperature sensor to enhance its working.

I received valuable feedback on the fetal movement detection belt and customized Doppler, which will help refine and improve the technology further.

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Kashif Ayyub
Visit of University of Lorraine, France
November 12 – 19, 2023

- **Name of the Participant:** Kashif Ayyub
- **Affiliation:** COMSATS University Islamabad, Pakistan
- **Host Institution:** University of Lorraine, France
- **Visit Dates:** November 12-19, 2023
- **Title of Project:** Sensing, Artificial Intelligence and Edge Networking towards Rural Health Monitoring (SAFE-RH)
- **Erasmus+ Project Reference Number:** 619483-EPP-1-2020-1-UK-EPPKA2-CBHE-JP

I participated in the SAFE-RH meeting and training session at the University of Lorraine, France, from November 12 to November 19, 2023, as a member of the project team. This event provided a platform to present, evaluate, and discuss the project's overall progress, challenges, and key deliverables.

I provided updates on the ongoing mobile application development. All the layouts were discussed, and feedback regarding UI/UX development was noted. Afterwards, functionalities and services offered by the mobile applications were presented and discussion on comparison with the MIS was carried out. Additionally, I outlined the various challenges faced during the development of the *mobile application*, particularly highlighting the need for specific end users. I further informed the attendees that discussions were held with all partner institutions regarding the initial testing of the mobile application in Pakistan.

Moreover, I participated in the testing activity of MIS, recorded the outcomes of the testing of the MIS and discussed major concern on the behalf of CUI Wah team. I along with Dr. Tassawar, also presented the updated status of Fetus movement monitoring belt. During the discussion, Prof. Naeem emphasized the accuracy of the result and optimization of the development using Force Sensitive Resisters (FSR).

Additionally, I actively assisted the students involved in the project with the installation of all relevant devices for testing and demonstration purposes, ensuring that all technical components were functional for the project’s ongoing research and development activities

Overall, the meeting proved to be highly productive, fostering stronger collaboration with both international and local partners while significantly advancing the objectives of the SAFE-RH project. It provided valuable opportunities for knowledge sharing, problem-solving, and aligning efforts toward achieving the project’s key goals.