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Mobility Report

Prof. Ehsan Ullah Munir
Visit of University of the West of Scotland
November 21 – 25, 2022

- **Name of the Participant:** Ehsan Ullah Munir
- **Affiliation:** COMSATS University Islamabad, Pakistan
- **Host Institution:** University of the West of Scotland
- **Visit Dates:** November 19-25, 2022
- **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

Along with my project team members, I had the opportunity to visit the University of the West of Scotland, UK, from November 19-25, 2024, 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 ensuring the successful completion of deliverables on behalf of CUI.

The project meeting officially commenced on November 21, 2024, with a warm welcome from Dr. Naeem Ramzan. I began the session by presenting a comprehensive update on the project's progress, focusing on key deliverables and the milestones achieved so far.

The first topic of discussion was the development of the project website. I provided an update on its current status, informing the team that a prototype of the website had been designed based on the collective input from all stakeholders. However, the design of the SAFE-RH logo is not finalized yet. Several logo options were presented during the meeting, leading to a lively discussion, with various suggestions made for revisions. It was agreed that these amendments would be incorporated to finalize the logo design in line with the project's objectives.

Afterwards, the status of the custom build wristband was discussed. I informed that the first version, which had been developed, had been tested, however accuracy is concern due in house development limitations. Thus, some improvements are required to achieve more accurate results. The required modifications, along with additional sensors needed to optimize performance, have been discussed. The updated version is expected to be delivered to the project team within 3 to 4 weeks. Prof. Ramzan stressed the importance of speeding up this process to ensure that the testing phase could begin as soon as possible, to meet project timeline and objectives.

The next major topic was the development of the mobile app, another key element of the project. An in-depth discussion about its current status were made and the challenges associated with linking the app to the Management Information System (MIS) developed by Capital University of Science and Technology (CUST) were also discussed. Several technical issues had been encountered in integrating the app with the MIS. The key features of the app were also discussed in detail, with the participants being briefed on its functionality. It was recommended that the app should include different login options for various user roles, such as patients, doctors, and healthcare providers, each with its own unique features and permissions. The interface design of these sections was also discussed, ensuring they would be user-friendly and intuitive. Furthermore, the meeting covered the specific features and information that would be required within each user login, with suggestions made to enhance the app's utility and overall user experience.

In addition to these technical discussions, the meeting also held on the academic output of the project. It was informed that a research paper focusing on the literature review of the Fetus Monitoring Belt had already been published, marking an important academic contribution from the project. The participants agreed that several more research papers should be produced to highlight the innovative work being done. Dr. Hassan volunteered to collaborate closely with the CUI team to finalize these publications and ensure their submission to reputable journals.

The visit to the University of the West of Scotland was highly productive, offering valuable opportunities for collaboration, feedback, and problem-solving. The discussions held during the meeting were instrumental in pushing the project forward, ensuring that the hardware and software components are on track for successful completion, and strengthening the academic output of the SAFE-RH project.

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Tassawar Iqbal
Visit of University of the West of Scotland,UK
November 19 – 25, 2022

- **Name of the Participant:** Tassawar Iqbal
- **Affiliation:** COMSATS University Islamabad, Pakistan
- **Host Institution:** University of the West of Scotland, UK
- **Visit Dates:** November 19-25, 2022
- **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, along with the project team, visited the University of the West of Scotland to participate in the first project meeting and workshop for the SAFE-RH project.

During this visit, I presented updates on the development of the project's website, showcasing the prototype to the team. The presentation included a thorough walkthrough of the website's design, structure, and functionality. Additionally, I presented several design options for the SAFE-RH logo. A detailed discussion followed, where we considered how the logos aligned with the project's objectives. Feedback was collected, and amendments were proposed to refine the designs.

Regarding the Maternal remote health monitoring, the first prototype was presented. It was noted that some improvements were necessary to achieve more accurate results, including the need for modifications and additional sensors. It was informed that updated version of the maternal remote monitoring kit will be finalized within a couple of months, after which further testing will be conducted to ensure its functionality and reliability. This discussion emphasized the importance of continuous refinement and collaboration to ensure the success of the technology.

I alongwith Prof. Ehsan also discussed the budget details with Prof. Naeem Ramzan. In addition to the financial discussions, we engaged in a productive conversation about potential publications, identifying key areas of the project that could be further developed into academic papers or journal articles

The meeting offered a valuable opportunity for in-depth interaction with the entire project team, fostering open discussions on various challenges and issues encountered in the SAFE-RH project. It facilitated meaningful deliberations, where insights and solutions were shared to address these issues and advance the project towards successful completion.

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Mobility Report

Dr. Saima Gulzar
Visit of University of the West of Scotland
Nov.19 – 25, 2022

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

Affiliation: COMSATS University Islamabad, Pakistan (CUI Wah)
Host Institution: University of the West of Scotland
Mobility Period: Nov 19 – 25, 2022
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

I participated in the SAFE-RH project's training and initial meetings held at the University of the West of Scotland (UWS). This week-long event marked the beginning of the SAFE-RH project's working phase, with training sessions focusing on project objectives, methodologies, and team collaboration. The project aims to develop advanced remote health monitoring solutions, particularly in maternal and fetal health monitoring, which was part of CUI, Wah.

2. Purpose of the Visit

The purpose of my visit was to have training and meetings on remote health monitoring, specifically focusing on understanding the project requirements and CUI team responsibilities.

3. Training and meeting Highlights

Following is the main highlights of five-day meeting,

I assisted Dr. Ehsan Ullah Munir, the team lead from CUI, Wah the introduction and basic understanding including all modules of SAFE-RH project, including web site developed and progress of the project.

The focus of the meeting with all international project partners was on the implementation modules of the project. I provided a demonstration with my team on initial implementation of remote monitoring and data acquisition.

The literature review was conducted and presented some research related aspects and findings on our project part as well as the existing devices and techniques that have been used in maternal, fetus and infant health monitoring.

The Day four was dedicated to building the collaborative framework needed for the project's success**,** Dr. Naeem Ramzan provided guidance on collaborative work, team assignments and managements and trained how to achieve milestones of the project.

On the final day focused on the next steps and long-term planning for the SAFE-RH project. I attended the meeting to get myself trained and familiarize myself with the next phase of the project, including timelines, upcoming milestones, and deadlines for the initial testing of devices and systems.

Knowledge Exchange and Networking

During the event, I engaged in meaningful discussions with other project partners and researchers from UWS, academics, and industry professionals. Key discussions revolved around:

- Integration of remote health monitoring systems into existing healthcare infrastructures.
- Enhancements in wearable health technologies, especially for maternal care.
- Collaborations for future development of remote fetal health monitoring devices.

This exchange of ideas will pave the way for potential partnerships and collaborations, which can lead to further advancements in the field.

5. Outcomes and Future Steps

The following are the outcomes of mobility.

1. Understanding the different aspects and deliverables.
2. Initial working on the literature review on maternal, fetus and infant devices

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

1. The improvements in the implementation of remote sensing and monitoring were guided by Dr. Naeem.
2. It was also suggested to complete the meet the project requirements as guided by Dr. Naeem.

I received valuable feedback on my role in CUI, a team that helped to refine and improve the technology further.

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Mobility Report

Ikram ul Haque

Visit of University of the West of Scotland, UK
November 19 – 25, 2022

- **Name of the Participant:** Ikram ul Haque
- **Affiliation:** COMSATS University Islamabad, Pakistan
- **Host Institution:** University of the West of Scotland, UK
- **Visit Dates:** November 19-25, 2022
- **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, along with the project team, visited the University of the West of Scotland to participate in the first project meeting and workshop for the SAFE-RH project.

During this visit, I presented updates on the development of the pilot, showcasing the prototype to the team. The presentation included a thorough walkthrough of overall architecture of the pilot, and its functionalities. Feedback was collected, and amendments were proposed to refine the designs.

Regarding the Maternal wellbeing, I informed the attendees that the first prototype had been developed for vital signs monitoring. It was noted that some improvements were necessary to achieve more accurate results, including the need for modifications and additional sensors. It was informed that updated version of the maternal remote health monitoring prototype will be ready within a couple of months, after which further testing will be conducted to ensure its functionality and reliability. This discussion emphasized the importance of continuous refinement and collaboration to ensure the success of the technology.

I along with Mr. Zulfiqar Ali also presented the machine learning based prediction algorithms for maternal health prediction. The participants extended different proposals for the emergency alerts generation and emphasized to define its mechanism for early and timely communication of critical maternal health situations.

The meeting offered a valuable opportunity for in-depth interaction with the entire project team, fostering open discussions on various challenges and issues encountered in the SAFE-RH project. It facilitated meaningful deliberations, where insights and solutions were shared to address these issues and advance the project towards successful completion.

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Mobility Report

Zulfiqar Ali

Visit of University of the West of Scotland, UK

November 91 – 25, 2022

- **Name of the Participant:** Zulfiqar Ali
- **Affiliation:** COMSATS University Islamabad, Pakistan
- **Host Institution:** University of the West of Scotland, UK
- **Visit Dates:** November 19-25, 2022
- **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, along with the project team, visited the University of the West of Scotland to participate in the first project meeting and workshop for the SAFE-RH project.

During this visit, I presented the machine learning based trained models for prediction of maternal health. The presentation included scenarios of prediction, and its demonstration. Feedback was collected, and amendments were proposed to refine the models.

Regarding the Maternal wellbeing, I informed the attendees that the initial implementation of the models is completed. It was noted that some improvements were necessary to achieve more accurate results, including the need for modifications and additional datasets. This discussion emphasized the importance of continuous refinement and collaboration to improve the results.

I along with Mr. Ikram ul Haque also presented the prototype of remote maternal health monitoring prototype. The participants extended different proposals to ensure the compliance of prototype with the proposed architecture of the project.

The meeting offered a valuable opportunity for in-depth interaction with the entire project team, fostering open discussions on various challenges and issues encountered in the SAFE-RH project. It facilitated meaningful deliberations, where insights and solutions were shared to address these issues and advance the project towards successful completion.