Activity Summary Report on Re-training of Teachers in the EU with an Emphasis on Gender Equity

1. Introduction

Dr. Dushyanthi Vidanagama, a senior lecturer from General Sir John Kotelawala Defence University, Sri Lanka participated in a training programme named 'Re-training of teachers in the EU with an emphasis on gender equity' aligning to the ERASMUS+ project of Curricula Enrichment delivered through the Application of Location-based Services to Intelligent Transport Systems (LBS2ITS) during the period of 15th of May 2024 to 13th of June 2024 in the Department of Geodesy and Geoinformation at the Vienna University of Technology (TU Wien), Austria.

2. List of Activities done

2.1 Assignment Project Supervision

Assignment project supervision was conducted for the module named Location based Services in Master of Cartography and Master of Geodesy and Geoinformation degree programmes

The following four assignment projects were supervised by me along with the module leader Prof. Retscher Guenther.

- **Spatial Data-Driven Traffic Flow Prediction using Machine Learning**
  The aim of this project is to enhance the efficiency and safety of transportation systems by leveraging advanced data analytics techniques to predict traffic flow patterns.

Student No	Name of the Student
12341819	Cao Qianyi
12342003	Iqbal Maryam
12342281	Zhang Yuxuan

- **Feature Extraction for Urban Area Identification**
  This project aims to find important features of urban identity from public space.

Student No	Name of the Student
12341813	Alday Tlapa Brenda Denise
12341816	Amralina Nargiz

12342109	Salinas Joselyn

- **Identification of Urban Areas using Machine Learning**

  The aim of this project Identification of urban areas based on a machine learning algorithm that groups buildings within portions of space of sufficient density

Student No	Name of the Student
11820013	Bösch Jakob Simon
11915518	Bogner Katrin Anna
12342280	Wolffram Pia

- **Urban block Carbon Emission Prediction with Building Environment Factors (BEF)**

  Provide carbon emission information at the urban block level for formulating local urban heat location alleviation strategies and low carbon planning.

Student No	Name of the Student
12108322	Voß Nils
12129029	Reggel Nadia
12341818	BrickerJuliette

During the first week of the stay, Dr Dushyanthi was involved in the initial project discussion with the students and described the aim of the project, the flow of methodology, and the expected outcome.

The second week the students had their mid-term presentations related to the projects they were involved in. In the last two weeks, there were some progress discussions with the groups. The final presentations and the report submission happened at the end of June and July 2024.

2.2 Guest Lecture

Dr Dushyanthi conducted a guest lecture under the topic of 'Big Data Analytics with Machine Learning' on 21st of May 2024 for the master's students of Master of Cartography and Master of Geodesy and Geoinformation. During the lecture, she explained the key areas like Big Data, Big Data Analytics, Machine learning concept, techniques, and machine learning evaluation metrics. The knowledge the students gained from the lecture could be applied to their projects as well.

2.3 Seminar

Dr Dushyanthi conducted a seminar on 'Machine Learning for Location-based Services' on 29th of May 2024. During the seminar, she explained the machine learning concept, machine techniques, and how machine learning can be used with location-based services to gain more advantages in the domains of healthcare, agriculture, navigation, riding services, marketing etc. Also, she discussed some real-world applications developed with the support of machine learning and location-based services in different domains. Also, she explained the advantages and challenges of incorporating machine learning with location-based services.

2.4 Discussions on Research Collaboration

During the visit, she had fruitful discussions on research collaboration with Univ. Prof. Dr.-Ing. Hans-Berndt Neuner, Head of the Engineering Geodesy Research Division, Dr. Jelena Gabela Majic, Project Coordinator of LBS2ITS and Mr. Max Brandstätter, Univ. Ass.Dipl.Ing., both members of the Engineering Geodesy Research Division, and Ms. Andrea Binn, Univ.Ass.in the Research Division Cartography.

3. Personal Outcomes

- Enhanced understanding of the application of machine learning with location-based services
- Gained practical experience in supervising problem-based learning assignments.
- Improved presentation and lecturing skills through guest lectures and seminars

4. Suggestions for the implementation of Problem-Based Learning in Sri Lankan Universities

Problem-Based Learning is an educational approach that involves students working on real-world problems and challenges in a way that promotes critical thinking, problem-solving, and independent learning. Initially, the supervisor provides some topics related to problems, aim and key points regarding the methodology and the expected outcome. Then, the students select a topic according to their interests. Afterward, an initial meeting happens with the students and the

supervisor explains about the problem and provides some recommended reading materials. Then the students are given time to study the methodology and ready for a proposal presentation. The supervisor gives feedback at the presentation. Continuously students are engaged with the project work and finally they have to provide a report on the final outcome followed by a presentation to share their deliverable with others. The supervisor will allocate marks for their entire work, and it will count for the final assignment marks. This kind of assignment can be included in modules related to ‘Location-based Services to Intelligent Transportation Services which required to enhance the knowledge on practical aspects.

These projects are often based on real-world challenges and problems. During the time, student may ask questions, do research and explore new knowledge. Workshops or seminars can be organized during the time, to give new knowledge to the students. These projects often integrate multiple subject areas. Since this involves interdisciplinary learning, helping students make connections between different subjects. While engaging in meaningful projects helps students retain information longer because they are applying what they learn in a practical context. Students often work in teams, promoting collaborative skills.

While involved in problem-based learning methods teachers can also explore new instructional strategies and methodologies, which can enhance their professional skills. Since this involves collaboration with colleagues, industry professionals, and the community, providing teachers with new perspectives and resources.