FM4017 Project

Title: **AI-Driven Development of Open-Source, Cross-Platform Mobile Apps for Sensor Data Monitoring and Analysis**

USN supervisor: Hans-Petter Halvorsen, Saba Mylvaganam

External partners: Altibox, Dimension Four

Task background:

The pivotal role of mobile phones and apps in modern technology: In today's world, mobile phones and apps are at the center of technological advancements. The two dominant platforms for smartphones are Apple's iOS and Google's Android. Numerous tools are available for developing mobile applications, but one of the most transformative is Artificial Intelligence (AI). How can AI be utilized and integrated into the development of contemporary mobile applications?

AI can enhance mobile app development in several ways:

- Personalization: AI algorithms can analyze user behavior to provide personalized experiences, making apps more engaging and user-friendly.

- Automation: AI can automate repetitive tasks, improving efficiency and reducing development time.

- Predictive Analytics: By analyzing data, AI can predict user needs and preferences, allowing developers to create more intuitive and responsive apps.

- Enhanced Security: AI can detect and respond to security threats in real-time, ensuring user data is protected.

- Natural Language Processing (NLP): Integrating NLP allows for advanced features like voice recognition and chatbots, enhancing user interaction.

By leveraging AI, developers can create smarter, more efficient, and highly personalized mobile applications that meet the evolving needs of users.

Task description:
Main tasks planned for this project are:

- Perform a study on tools for app development and discuss pros and cons of the different tools. Present an overview and select one tool to be used in this project.

- Check open-source materials on AI tools suitable for developing predictive models. Discuss pros and cons of selected different AI tools. Based on your research, select one open-source AI tool for your project.

- Perform thorough research on online sources for weather forecasting including available weather data and discuss pros and cons. Select one source to use in project.

- Select which parameters are normally used for indoor environment and weather to do energy calculations of buildings, based on your research. Discuss the use of the selected parameters.

- Select a building where we can get historical and current data for indoor environment, energy consumption, and weather data (possibly one building at USN campus). Data will be stored in a cloud database for use in project. Updating data from building control system to cloud database will not be part of project.

- Use an open-source AI to make a prediction of energy consumption based on historical data and weather forecast for a selected period.

- Develop a mobile app that will display current and historical data for indoor environment, energy consumption, and weather data. The selected App should also display a forecast of future energy consumption.

- The HW, SW and HW/SW integration for your system should be properly documented using the USN guidelines in the form of a technical report, with software documentation on GitHub and possibly presentation using YouTube.

Student category: ITA - suitable for both for Campus students and Online students

The project is suitable for students not present at the campus (e.g., online students): Yes

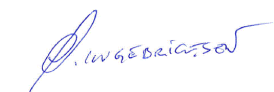**Practical arrangements**: None

Signatures:
Supervisors:

2024.09.29

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Students:

2024.09.29   2024.09.29   2024.09.29

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