

**Faculty of Electrical and Electronic Engineering**

**Semester II Session 2022/2023**

**Embedded Systems Design**

**BEJ42203**

**Section: 2**

**Group No.: 3**

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**Report Title: (write your report title)**

**Date: 28 June 2023**

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| **Name** | **Matric. No.** | **Contributions in the (1) Project Implementation and (2) Report** | **Digital Signature** |
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# 1. Project Introduction

The European Environment Agency reports that “[c]ars, vans, trucks and buses produce more than 70 % of the overall greenhouse gas emissions from transport”. Especially in cities, where many vehicles drive, health limits for fine particle matter get exceeded. Governments and cities are now curious to find fast solutions. The most recent is Abu Dhabi, they are starting a project where “AI-techniques will […] provide recommendations to improve traffic light efficiency, thus also reducing congestion and carbon emissions” (Zaman, S.). Its goal is to reduce stop time at intersections, especially at those having high pollution levels.

To have the software running successfully, a suiting hardware needs to be designed. Additional to the light signal and magnetic loop, it needs sensors for air quality and a display to show the current pollution level. As the ZYNQ 7000 is a good architecture to read all this information, do complex processing and give output to the traffic light and display it will be used.

This project will show how to establish such a traffic control system hardware. Therefor the report will discuss the project objectives, followed by an analysis of the hardware architecture. This is followed by a presentation of the results, a discussion and a conclusion.

# 2. Project Objectives

The project objective is to develop a traffic control system using the Zynq-7000 xxxxx. Further specified objectives can be found in the following list:

|  |  |
| --- | --- |
| No. | Description |
| 1. | Analyze which hardware components will be used. |
| 2. | Design the hardware architecture of the traffic control system using the Vivado software. Analyze performance. |
| 3. | Optimize the hardware and compare performance with the hardware state before optimizing. |

# 3. Project Architecture

# 4. Results

# 5. Discussion

# 6. Conclusion

# 7. References

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