

## **Abstract**

### **Using an LED panel to determine color blindness**

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The aim of this Research Paper was to learn about Arduino and the C++ programming language and in the end make a program which could determine color blindness. The Research Paper consists of two parts: practical and theoretical. The theoretical part of the paper involves analyzing internet materials about Arduino, color blindness and C++ programming language. The practical part of the paper involves coding programs on a LED panel and testing it. The methodology of the research includes studying internet materials and programming.

Three research questions were presented in the research to better understand Arduino, the possibilities of the developed LED panel, and the C++ programming language. Answers to the research questions were obtained from internet materials and through programming.

As a result of the research, it can be concluded that Arduino microprocessors have multiple applications for both beginners and advanced users. The same can be said for the C++ programming language. Both are also well suited for school curriculum, because there are plenty of adequate learning materials available. With the researched LED panel, it is possible to create various games, and using such a panel is a great way to learn about Arduino microprocessors and programming. The color blindness program itself is a great way to detect color blindness, especially in younger kids. The aim of the research was also to create study materials introducing Arduino in Estonian language. This work serves that purpose well, because it explains Arduino microprocessors and their utilization, as well as their primary programming language, C++.