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Using Augmented Reality To Enhance Learning Experiences About Electrical Circuits

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Using Augmented Reality To Enhance Learning Experiences About Electrical Circuits

Introduction

The AREngEd project aims at using Augmented Reality (AR) in Engineering Education. AR can be used to enhance lab experiments. For example, using overlying animations, we could add visualization of different phenomena such the amount of current flowing through an electrical circuit's components, or the execution of a program through the if-then and loops statements .

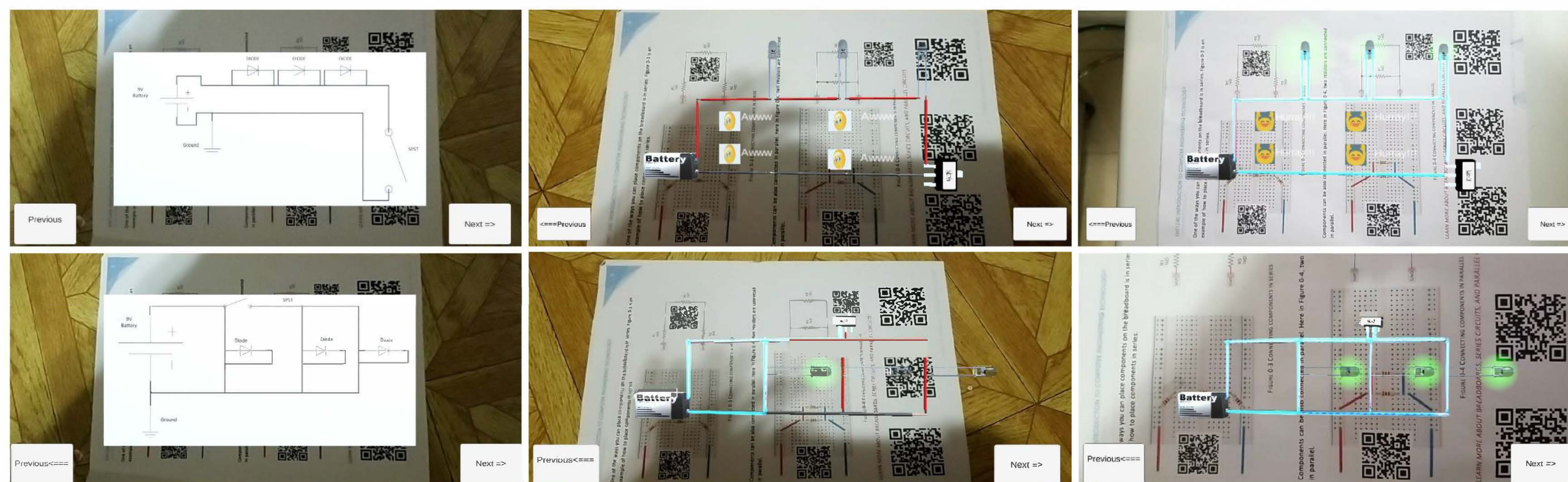
Objective

Using AR as an learning aid for students in the Electrical Circuits Course. We aim to enhance the Lab Manual adding QR codes that trigger an AR mobile APP that shows animations. The app will allow students experiment and play to understand basic series and parallel circuits. We believe that AR can help to improve passing rates in critical courses such as Electrical Circuits, where only 64% of pass with C or better.

Background

Augmented Reality is a mixture of reality and superimposed digital content generated by computers which can allow students to: (i) Observe flaws in their designs before building their projects, (ii) See phenomena's that are invisible to the naked eye and (iii) Be able to integrate projects that are common at large facilities in small spaces. For this project AR can serve as a learning aid as well as a basis for innovation.

Enhancing learning about Electrical Circuits. Circuit Diagrams and Construction of Series and Parallel circuits.



Utilities



Results and Future Work

- A working prototype APP for Android and IOS.
- Next, we plan testing usability and user acceptance.
- We will conduct a survey with faculty and students to find the impact of app on learning and teaching.

-Azuma RT. A Survey of Augmented Reality. Presence: Teleoperators and Virtual Environments 1997; 6(4): 355 - 85.

-Larsen, Y., Bucholz, H., Brosda, C., Bogner F. (2012) "Evaluation of a portable and interactive augmented reality learning system by teachers". Proceedings of the Proceedings of Science Center to Go Workshop in Augmented Reality in Education. Athens, Greece, October 27 - 29, 2011.