

# **Using the HTML5 Canvas Element for a Web-Based Multi-User Painting Application**

By

Michael J. Snyder

An Abstract of a Thesis Submitted to the Graduate

Faculty of Rensselaer Polytechnic Institute

in Partial Fulfillment of the

Requirements for the Degree of

MASTER OF SCIENCE

Major Subject: COMPUTER SCIENCE

The original of the complete thesis is on file  
in the Rensselaer Polytechnic Institute Library

Approved:

W. Randolph Franklin

Thesis Adviser

Rensselaer Polytechnic Institute

Troy, New York

April 2011

(For Graduation May 2011)

## **Abstract**

This project aims to implement a multi-user whiteboard application that runs completely within a browser without any plug-in dependencies. Using WebGL for the rendering of paint on the canvas and traditional HTML DOM objects for the user interface, an efficient and responsive application is offered. Actions performed by a user are recorded in real-time and asynchronously sent to the web server where they are archived in a MySQL database. This database is periodically and automatically queried by all connected users via a PHP interface and new updates are retrieved to present the most up-to-date state of the whiteboard. In addition, care was taken in the design of the application to ensure extensibility and modularization. Throughout the discussion of performance, design decisions, and related works, the benefits and usefulness of WebGL are exposed.

## **Index Terms**

multi-user painting, browser application, HTML5, WebGL, canvas, JavaScript, PHP, MySQL