Expresso: Typesetting Handwritten Mathematical Expressions on the Post-PC Tablet Computer

[Project Final Report]

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ABSTRACT

This paper sets forth to describe our process and products of fulfilling the capstone requirement of the Bachelor's Degree in Computer Science at the University of Puget Sound. Our project was to research, design, and implement a tablet-based software solution for the capture of handwritten mathematical expressions and compilation of its mathematical representation into an appropriate representative language (such as LaTeXor MathML).

Subjects approached in our project include image processing, artificial intelligence, application development for the Apple iOS platform (particularly in the tablet form factor), server development, as well as the adherence to a highly disciplined development cycle. We will attempt to most accurately and most briefly explain any uncommon concepts described hereafter.

1. INTRODUCTION

The utility of the touch-based computer interaction has only been recently fully realized, with the nascence of the "Post-PC" tablet in its migration away from the standard desktop usage paradigm commonly associated with computing. The modern tablet focuses on media consumption and so-called "basic" computing. In today's reality, most "Post-PC" tablets are incredibly powerful both in hardware and in software, supporting complex and challenging computations including the decoding of video, image processing, interpretation of multiple inputs, managing several network connections, and displaying high-resolution two- and three-dimensional graphics. Past their technical capabilities, these small computers have found their way into near-ubiquity of use. The touch interface of a "Post-PC" tablet offers a unique tool to any consumer—the direct input of figures via touch—that has only previously been common to graphics and imaging professionals.

2. REFERENCES