Senior Project - Picasso

Super Doodle: A Web-Based Freehand Drawing Tool
Senior Project: 2007-2008

Brent Abbott, Teja Basava, Sean Hume and William Troxel
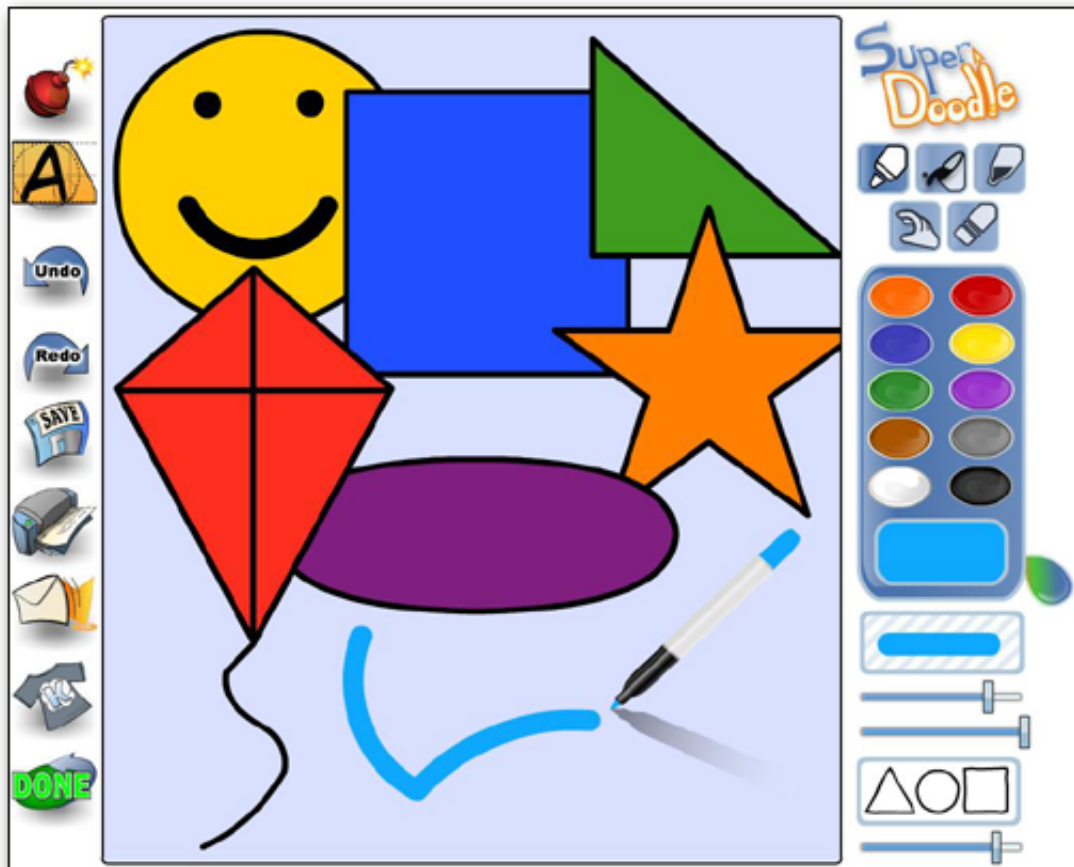
Kerpoof
Boulder, CO

Kerpoof is a Boulder startup that provides the premiere Internet creativity site www.kerpoof.com for kids, praised by the *Children's Technology Review*, the Sesame Workshop (formerly the Children's Television Workshop), the *School Library Journal*, and *TechCrunch*, as well as educators, parents, and children worldwide. Kerpoof is available in seven languages and allows kids to create original artwork, stories and movies.

The goal of this project was to produce a web-based, freehand drawing program for kids to add to Kerpoof's existing suite of creativity software. In addition to supporting all of the usual features of drawing programs such as save/load, undo/redo, clear, print, erase, fill, copy, color and pen size selection, move, and, of course, freehand drawing with the mouse, *Super Doodle*, as the software has come to be known, allows users with little drawing skill to create smooth, high-quality sketches. It does this by analyzing a user's mouse strokes to find various geometric features such as lines, curves, and angles, and then intelligently smooths the results -- jagged edges become straight lines and rounded bends become perfect curves.

Further, *Super Doodle* employs a number of "shape detectors" to determine a user's intention to draw a particular shape, rather than requiring the user to explicitly indicate their intention by selecting a specific tool. Roughly drawn rectangles morph into perfect rectangles as do similarly squares, triangles, ellipses, circles, diamonds, kite-shapes, and stars; scribbling over a previously drawn closed shape results in the shape being filled with the color of the pen. How much correction is made to a drawing can be user controlled from no correction to always drawing "perfect" lines, curves and shapes.

While *Super Doodle* supports many of the features only found in a handful of top-of-the-line drawing programs, its user interface has been carefully constructed to be extremely easy to learn with no menus and only four words of text. Although originally planned simply as a proof-of-concept application, Kerpoof was so pleased with *Super Doodle* that it has been fully integrated it into all facets of the existing production website. Since integration, *Super Doodle* has rapidly become one of Kerpoof's most popular products with hundreds of actual users filling the "shared scenes" section of the website with amazingly-creative doodles.

In addition to commercial success, *Super Doodle* won a "Best of Section" award at the Spring 2008 Engineering Design Expo as well as the *2008 Lloyd Fosdick Award* given to "exemplary collaborative projects that include CU Computer Science undergraduates as participants." The software was written in ActionScript 3.0 using the Flex 3 Software Development Kit.

Super Doodle User Interface

User-Created Doodle: Cap'n Carrot

User-Created Doodle: Mona Doodle

Picasso Team with System Testers