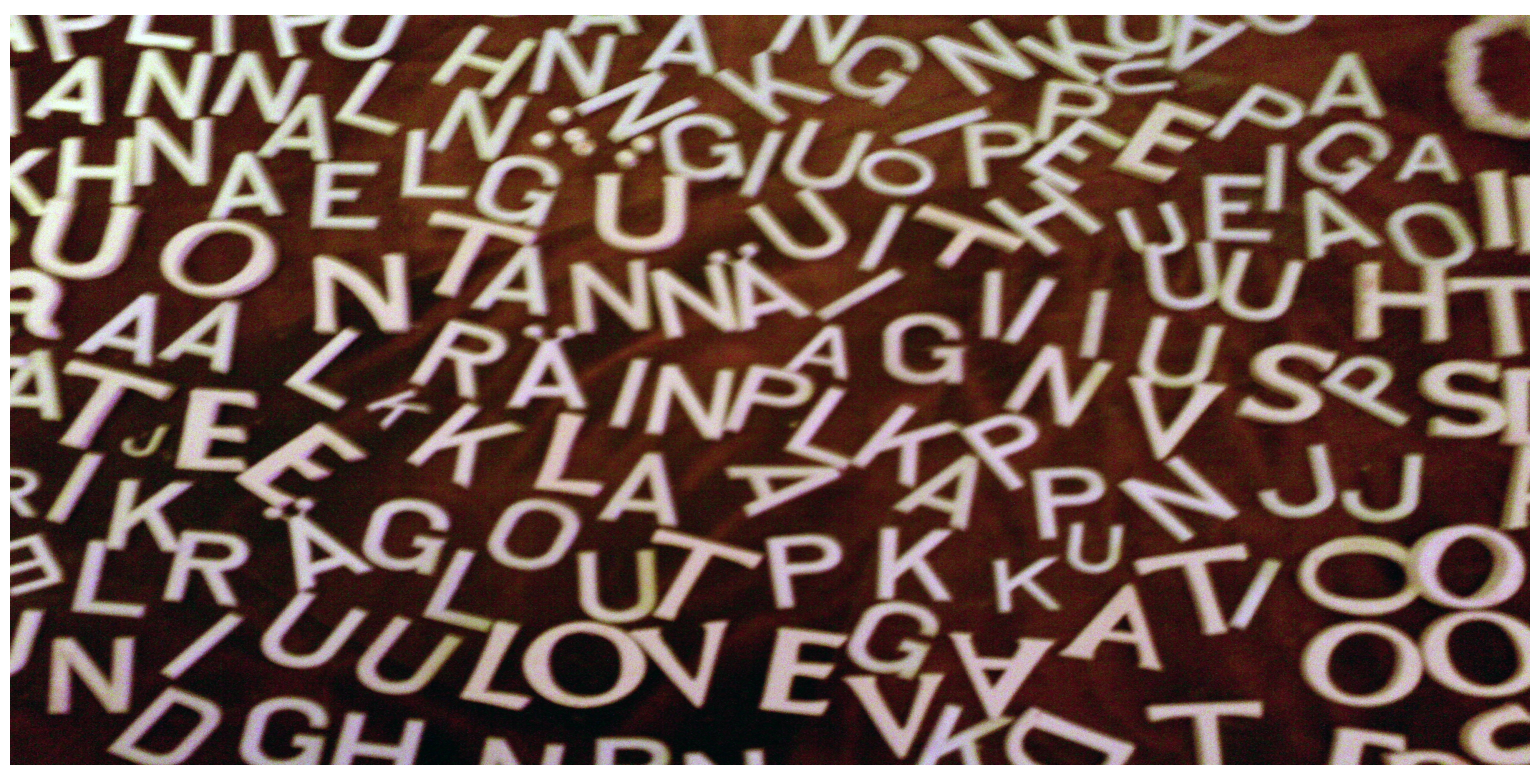


Touch Letters for Dyslexic Therapy

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INTRODUCTION

Up to one in five children in the US suffer from a language based learning disability, The most common form of this disability is dyslexia, afflicting nearly 15 percent of the population. Many of these children will struggle to learn to read, putting them at severe risk of dropping out of high school, much less achieving academic success in higher education.



BACKGROUND

There is no cure for dyslexia, however a variety of treatments and therapies are being researched and implemented. One of the most effective techniques found so far is making reading a multi-sensory experience, by adding extra senses such as touch or hearing to the act of reading. The United Kingdom's National Health Service recommends starting reading therapy as soon as possible, from ages as young as four years old. This project seeks to combine physical, touch based letters with touch screen technology to create a simple program suited for teaching very basic reading skills to young children.

METHODS

The program combines a touch monitor, physical letters, and the Processing image generating software. The letters have three conductive points built into the bottom of the piece. These three points are read into Processing by the SMT library through the touch screen monitor.

These points are used to create a graph of nodes that essentially represent a triangle. As any 3 lengths form a unique triangle, the distance between these points is measured and compared to a list of triangles stored in the program, with each letter being represented by a different triangle.

The program then compares the triangles being touched to the monitor against the letters of the picture being displayed on screen, such as a rat or a bag.

A B C D E F G H I J
K L M N P O Q R S T
U V W X Y Z

CONCLUSIONS

The program is exceedingly simple. The current version of the letters touched to the screen are much too unreliable, however a different approach to coating the bottom in conductive material may produce more consistent results.

There are however benefits to the current design. It's simple enough to be easily ported to many platforms, especially tablets and other mobile devices. Because many children and schools have easy access to these devices, the product fulfill its objectives best in this area, especially due to the portable and light weight nature of the entire system.

Further improvements could be made by adding sound to the experience, sounding out the letters as kids touch them to the screen, a relatively simple task that would be of immense benefit. The project is also not limited to the dyslexic; any child learning to read could benefit from the system.

REFERENCES

Demographic data

Dyslexia Center of Utah

(<http://dyslexiacenterofutah.org/dyslexia/statistics/>)

Therapy and Treatment Development

National Health Service (U.K.)

(<http://www.nhs.uk/Conditions/Dyslexia/Pages/Treatment.aspx>)

Frith, Uta, "Beneath the Surface of Developmental Dyslexia"

(http://www.icn.ucl.ac.uk/dev_group/ufrith/documents/Frith,%20Beneath%20the%20surface%20of%20developmental%20dyslexia%20copy.pdf)

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