Using WebGL as an Interactive Visualization Medium: Our Experience Developing SplatterJs

Alper Sarikaya & Michael Gleicher
University of Wisconsin—Madison

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sarikaya@cs.wisc.edu   @yelperalp
WebGL also does data-space computation!

GPGPU algorithms

Multi-pass shaders

+ Organizational Chart by Juan Pablo Bravo from the Noun Project
Mayorga & Gleicher. Splatterplots: Overcoming Overdraw in Scatter Plots, TVCG 2013
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uniform sampler2D texture;
uniform vec2 delta;

varying vec2 coord;

void main(void) {
    float curMax = 0.0;

    for (int i = 0; i < 8; i++) {
        for (int j = 0; j < 8; j++) {
            vec2 thisPos = coord * 8.0 + vec2(float(i), float(j)) * delta;
            if (thisPos.isValid()) {
                curMax = max(curMax, texture2D(texture, thisPos).r);
            }
        }
    }

    gl_FragColor = vec4(curMax, 0.0, 0.0, 1.0);
}
Outlier Selection

Use blending to randomly select point

Draw selected points to their original positions
WebGL
with data-space computation

Web Sockets
for providing partial, approx. answers

DataViews

Binary, typed arrays

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https://github.com/uwgraphics/splatterjs/