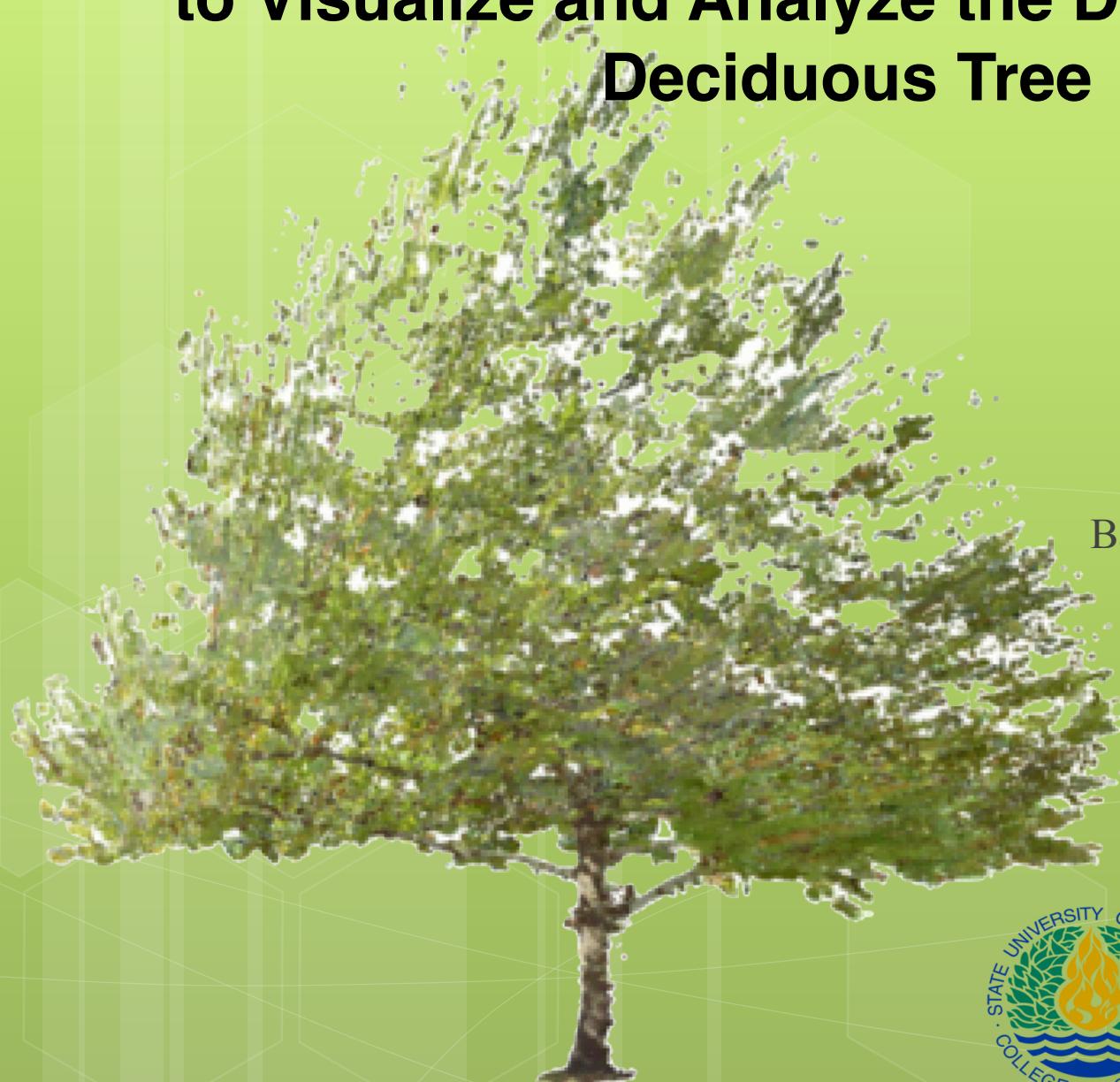


Colorful Math: Developing Algorithmic Methodology to Visualize and Analyze the Dynamics of a Deciduous Tree



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SUNY Geneseo

Dr. Bo Song

Baruch Institute of Coastal Ecology
and Forest Science

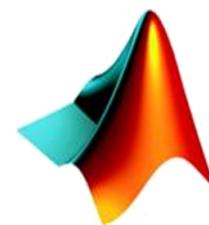
Dr. Vetria Byrd

Clemson University



GENESEO

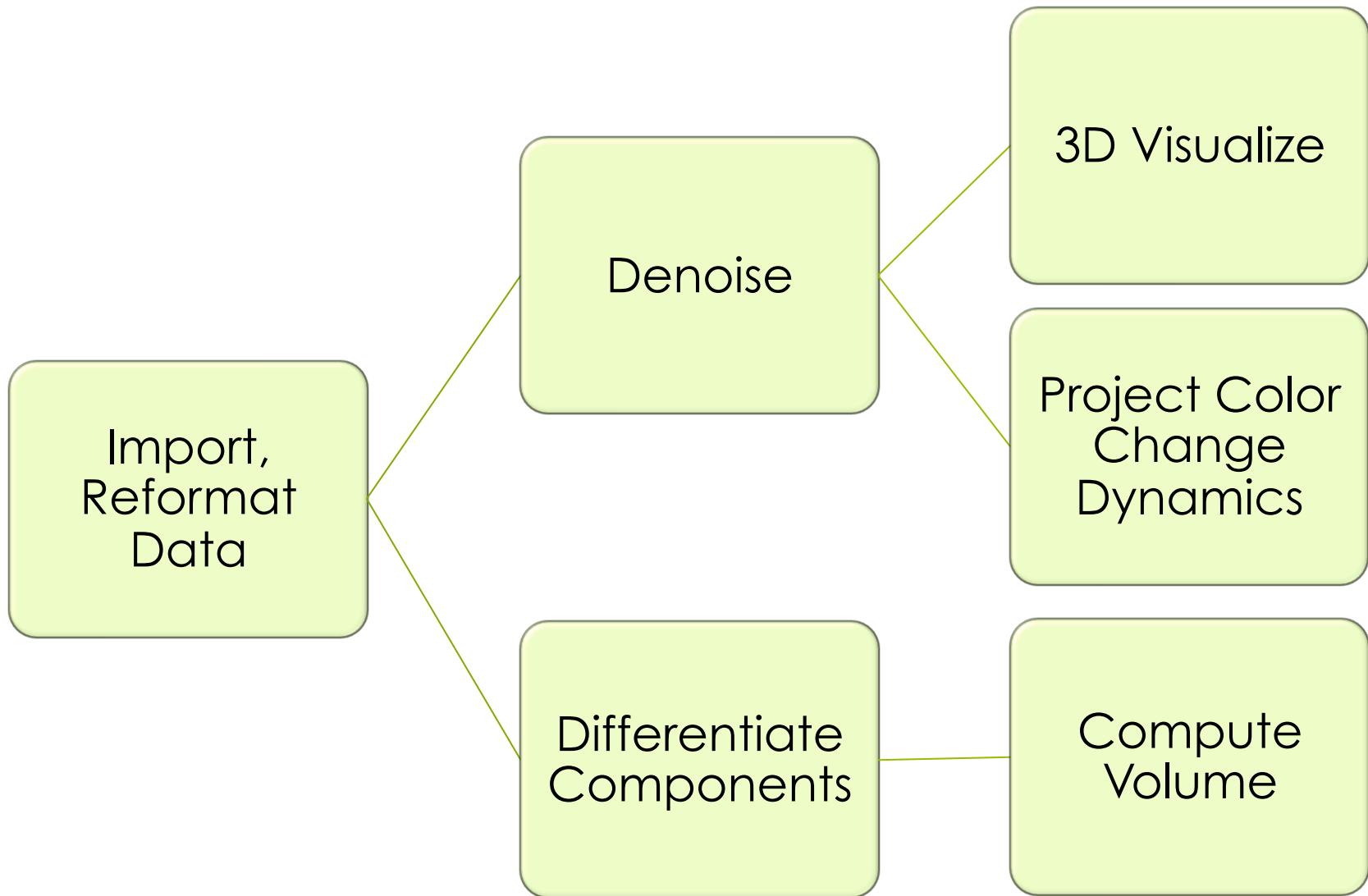
Description



MATLAB®

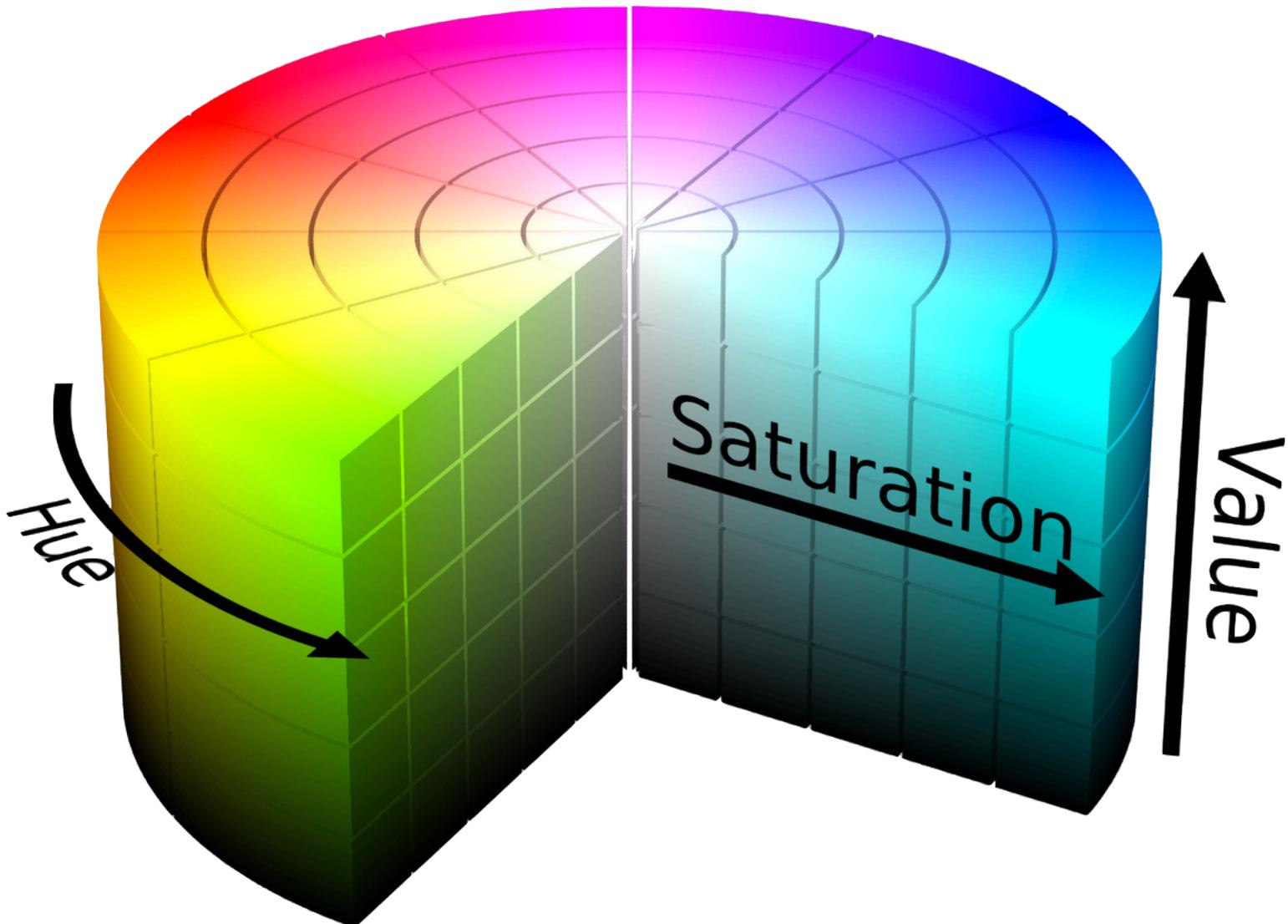


Methodology

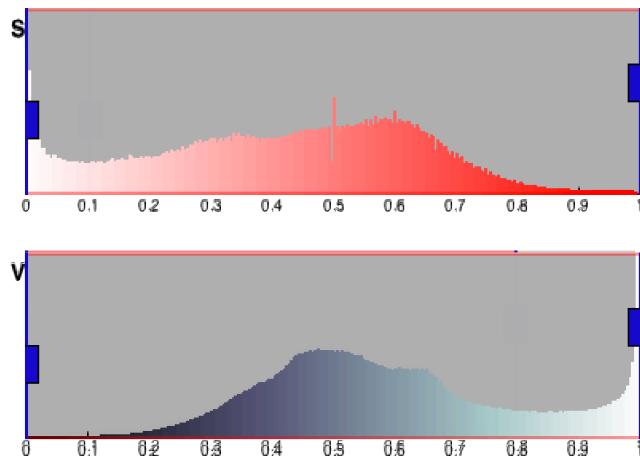
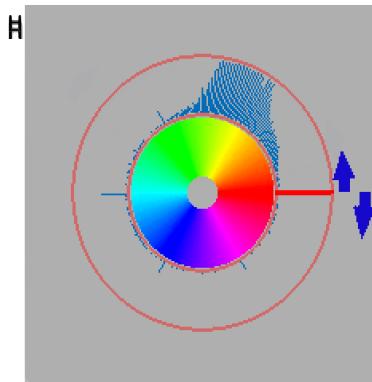


Background

HSV Color Space



Denoising



Denoising

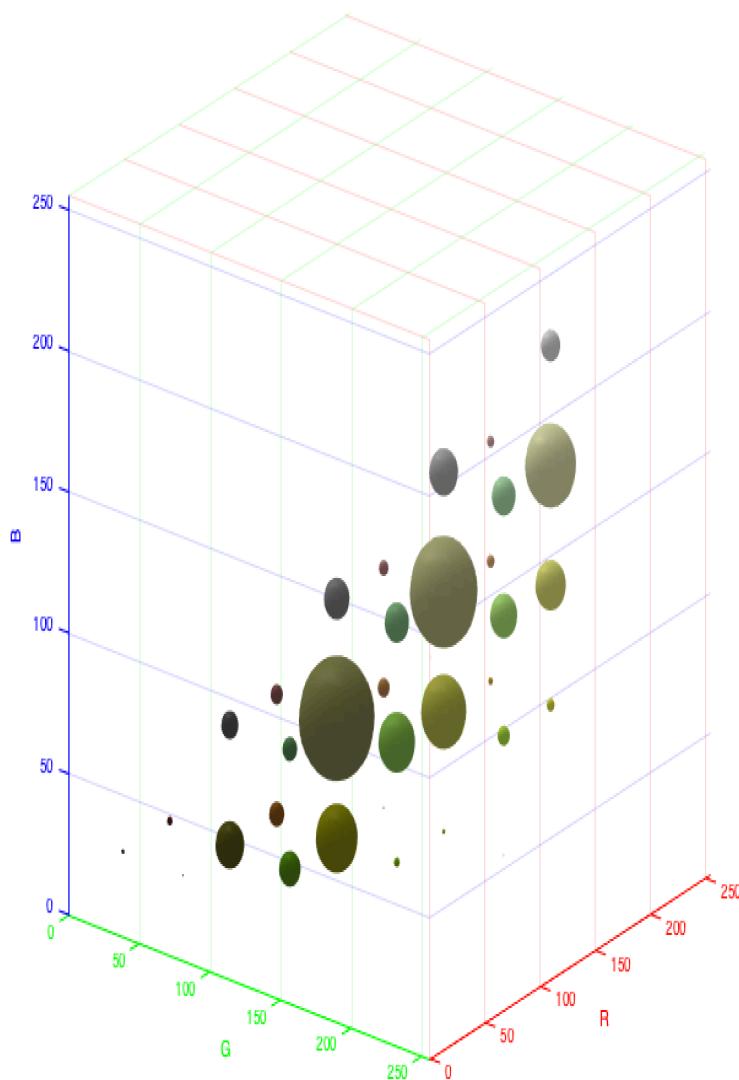
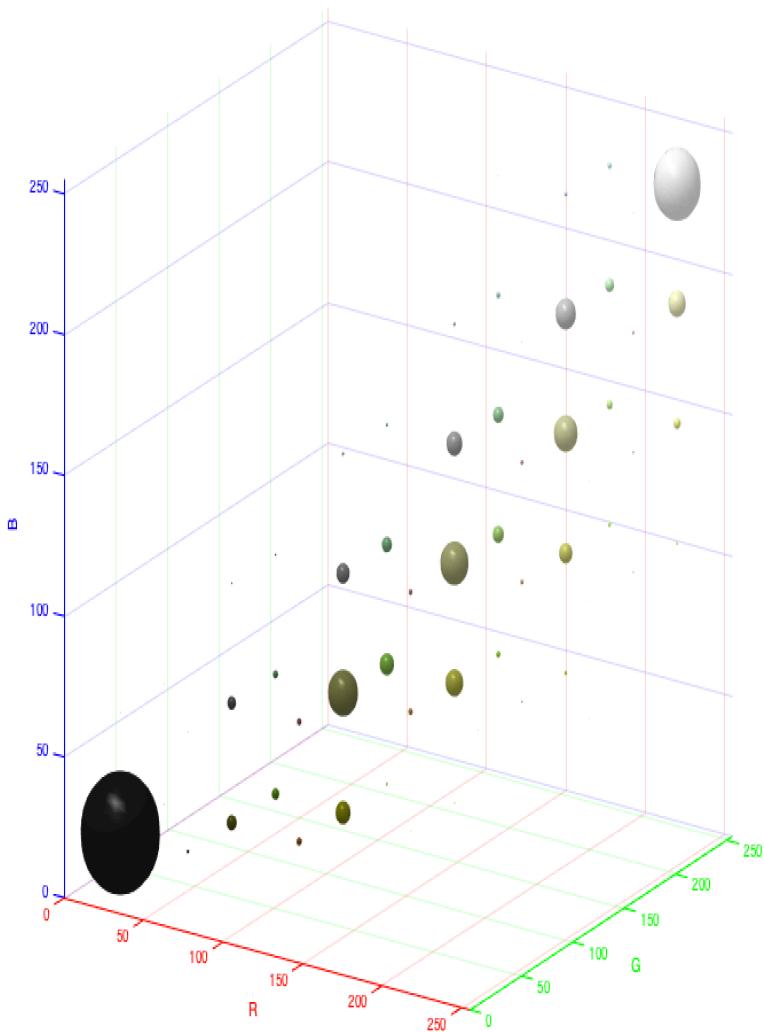


Before

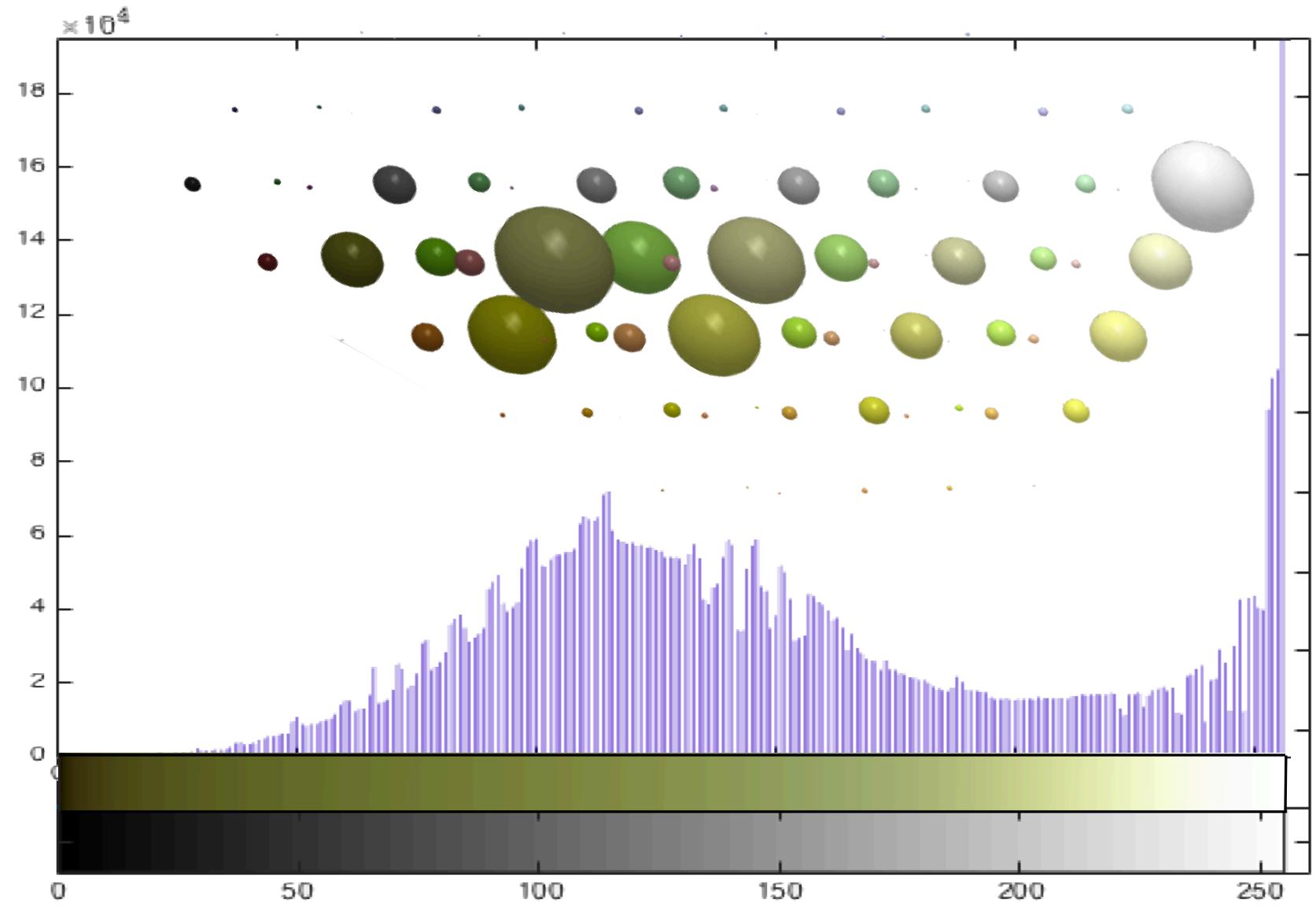
After

3D RGB

Week 0 Screenshot

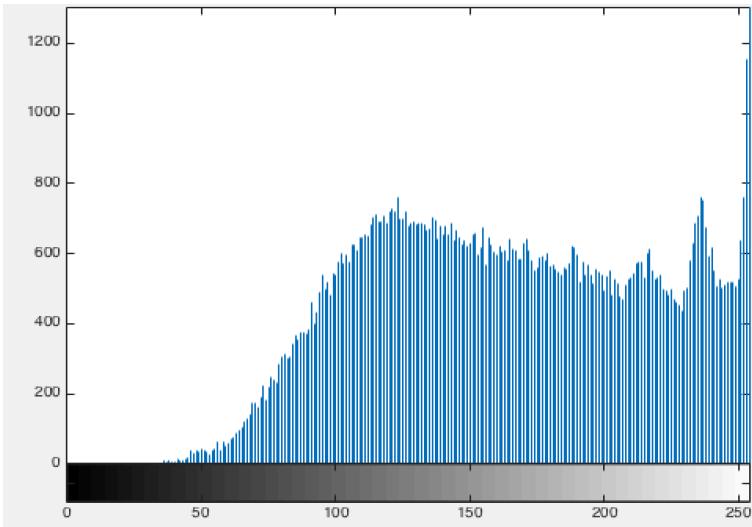


RGB, Grayscale

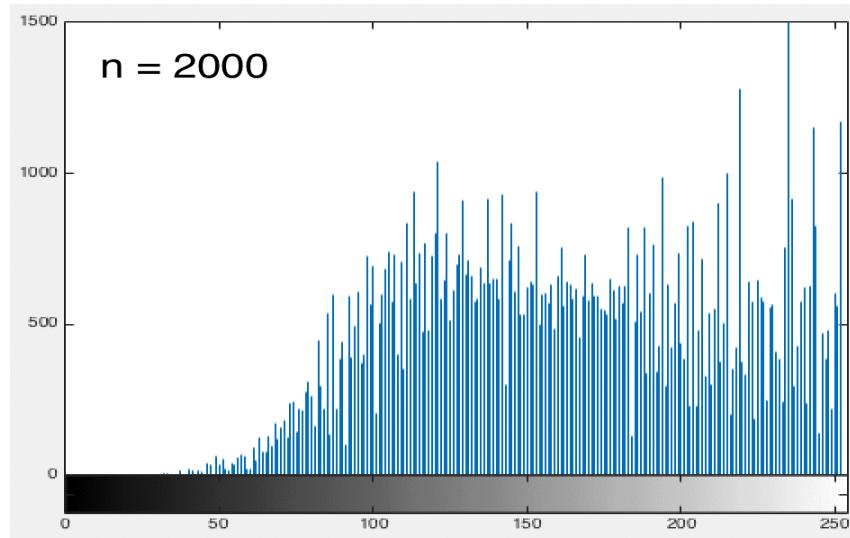


Differentiation

Rgb2ind function



Original

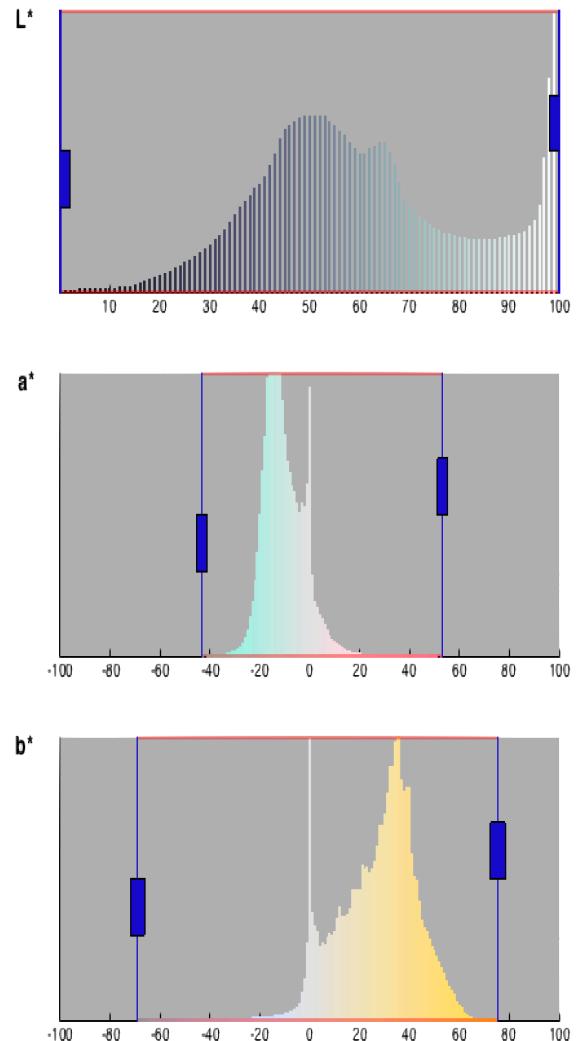
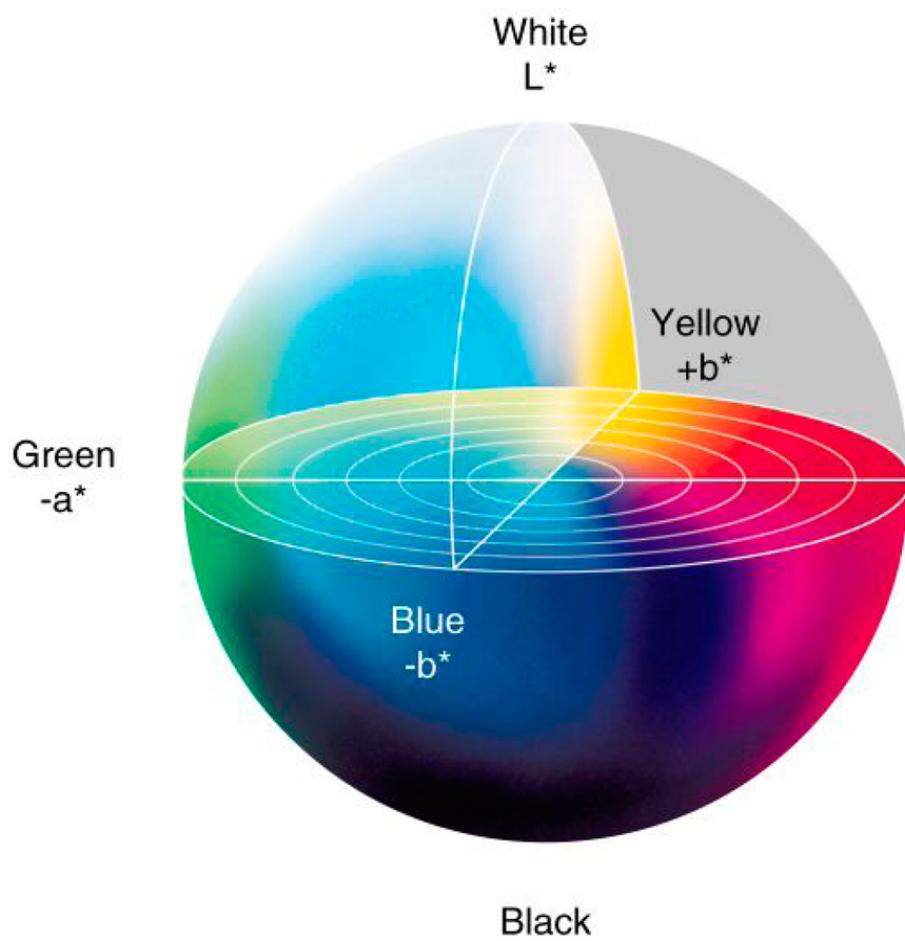


n = 2000



Differentiation

L*a*b* Color Space

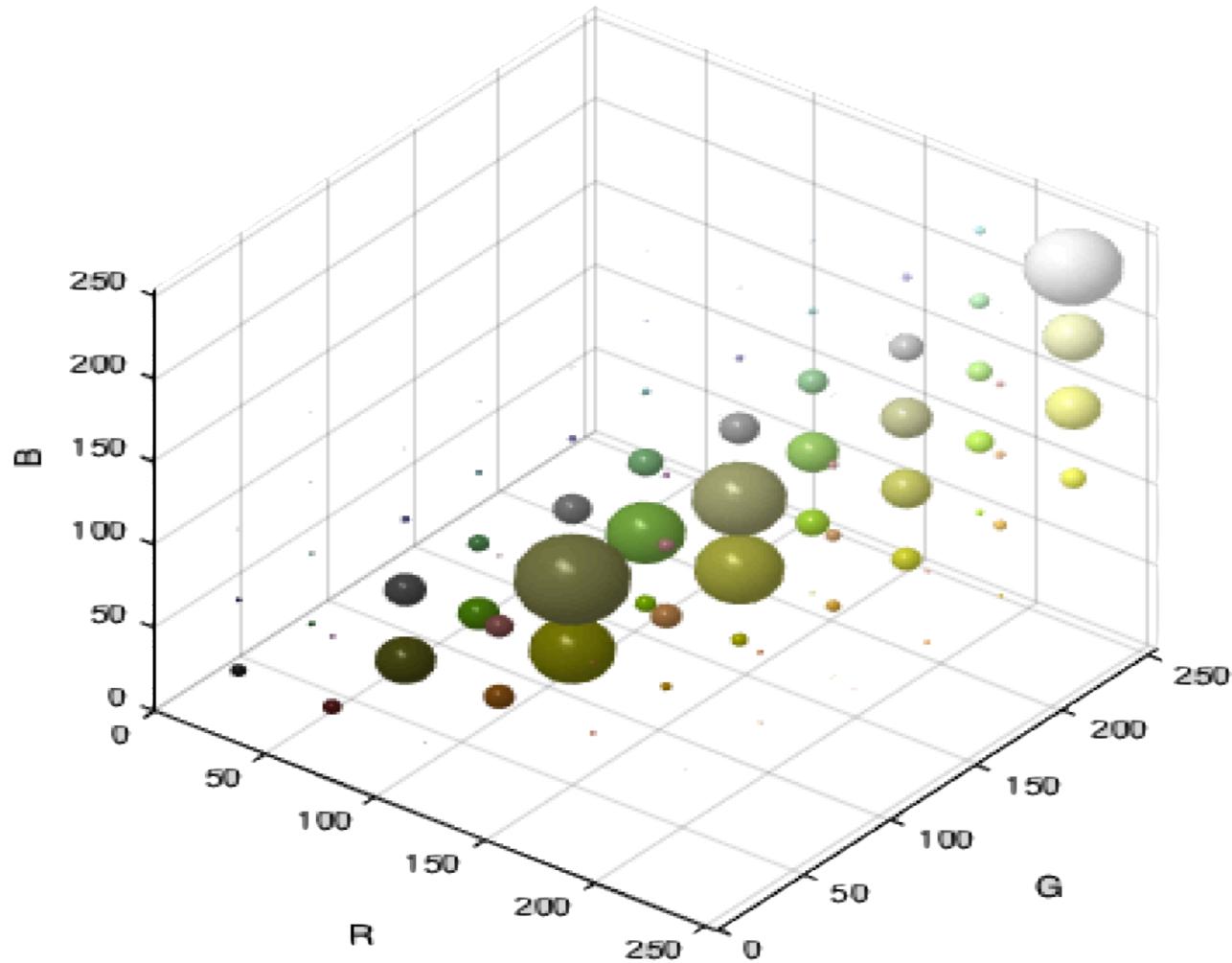


Differentiation



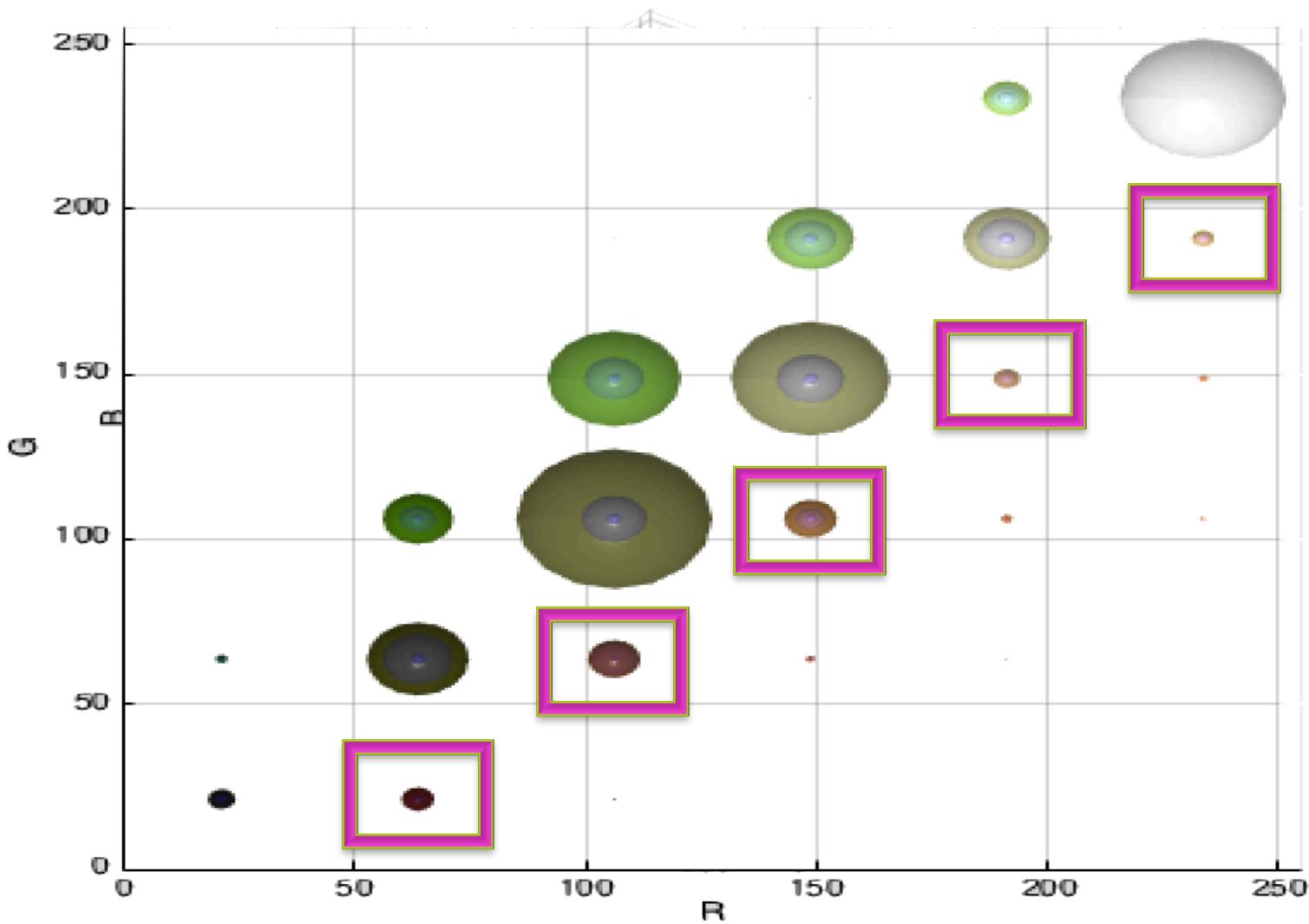
Differentiation

Experimental Approach



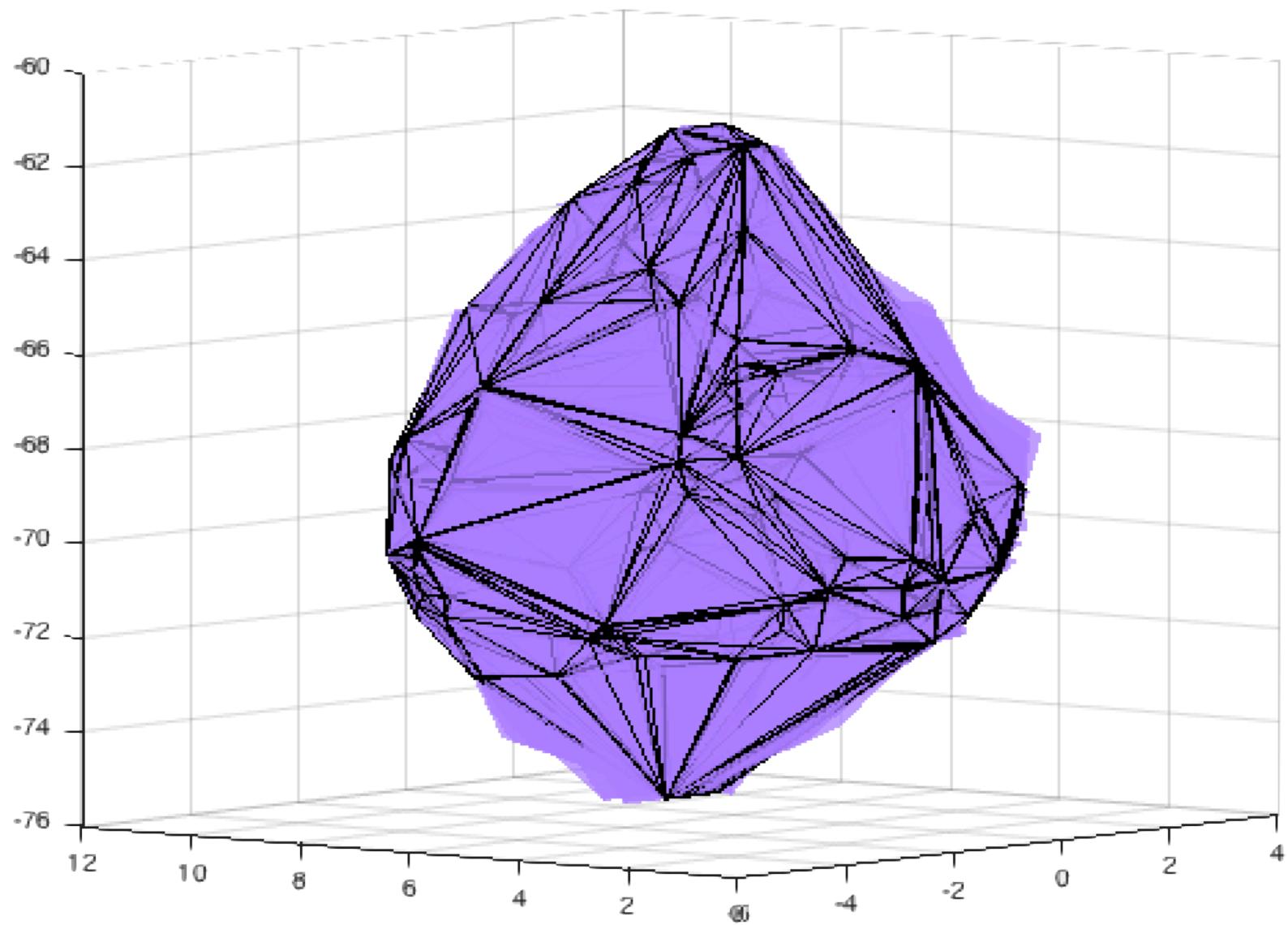
Differentiation

Experimental Approach

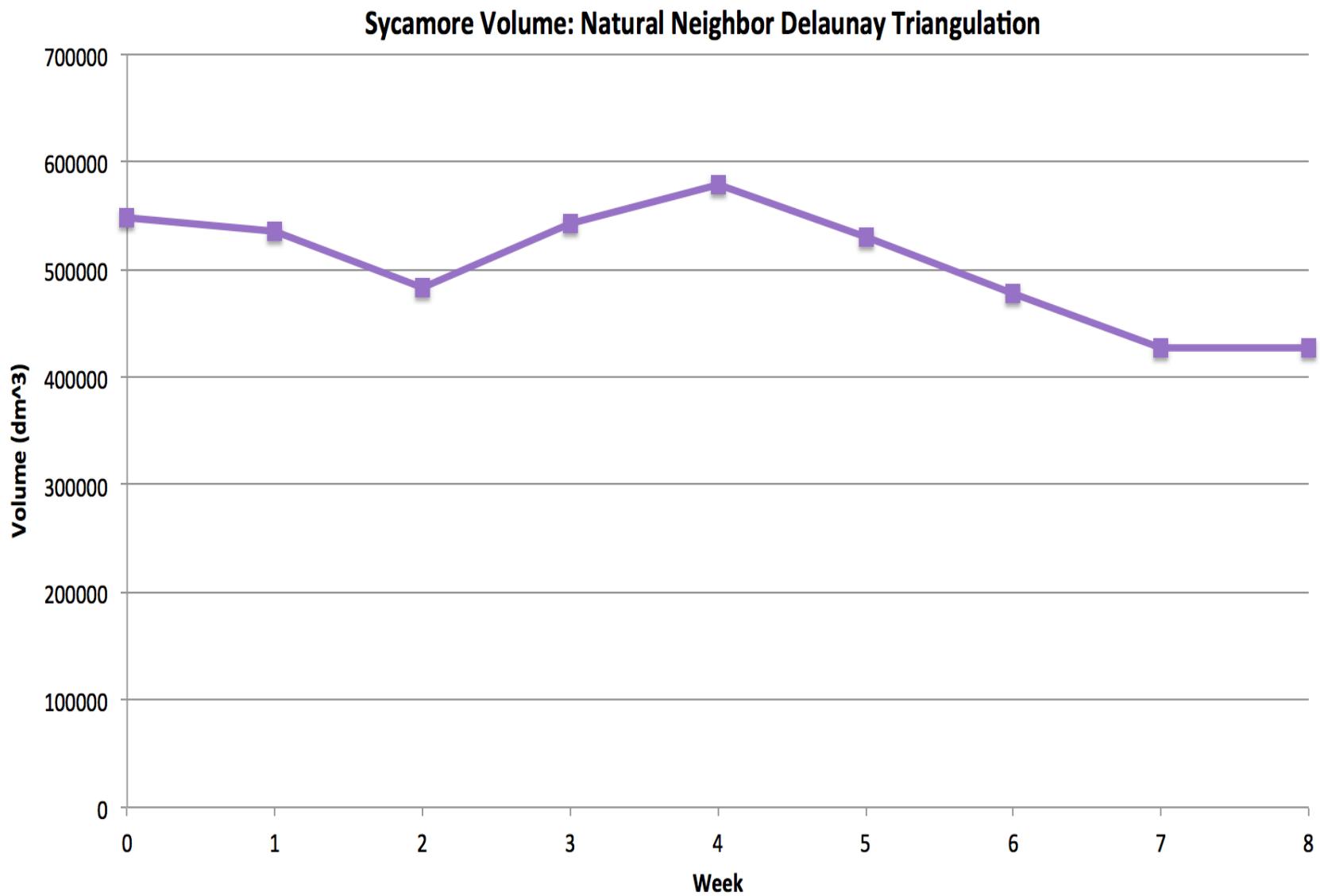


Volume

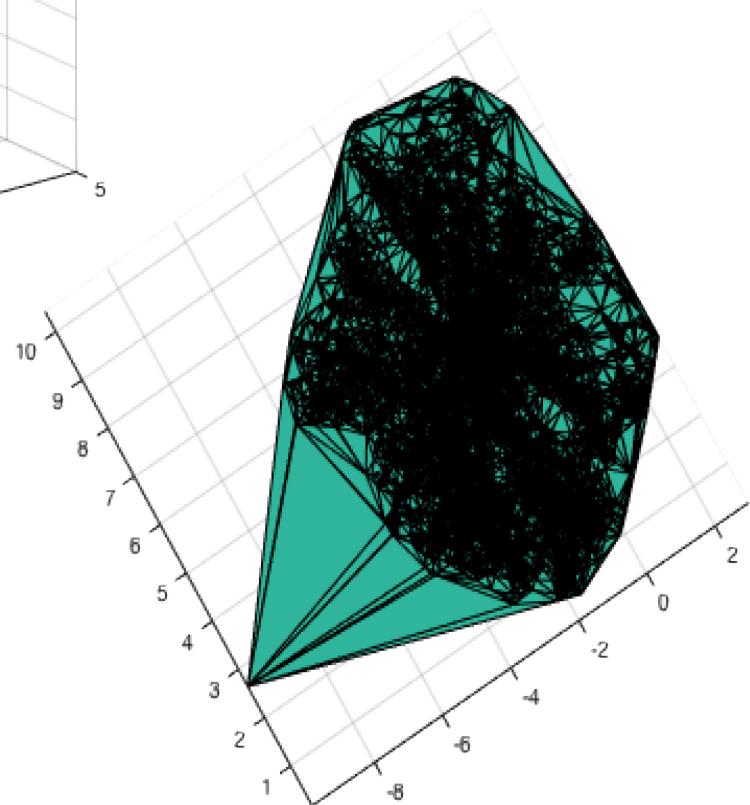
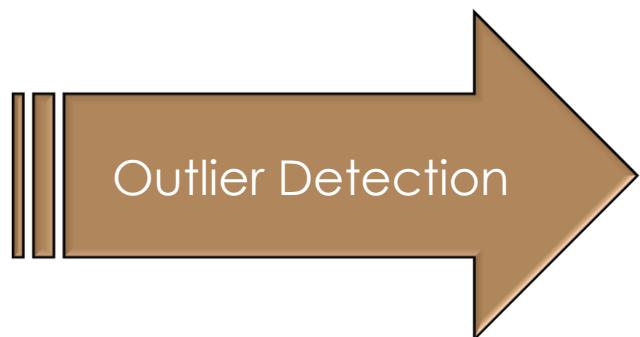
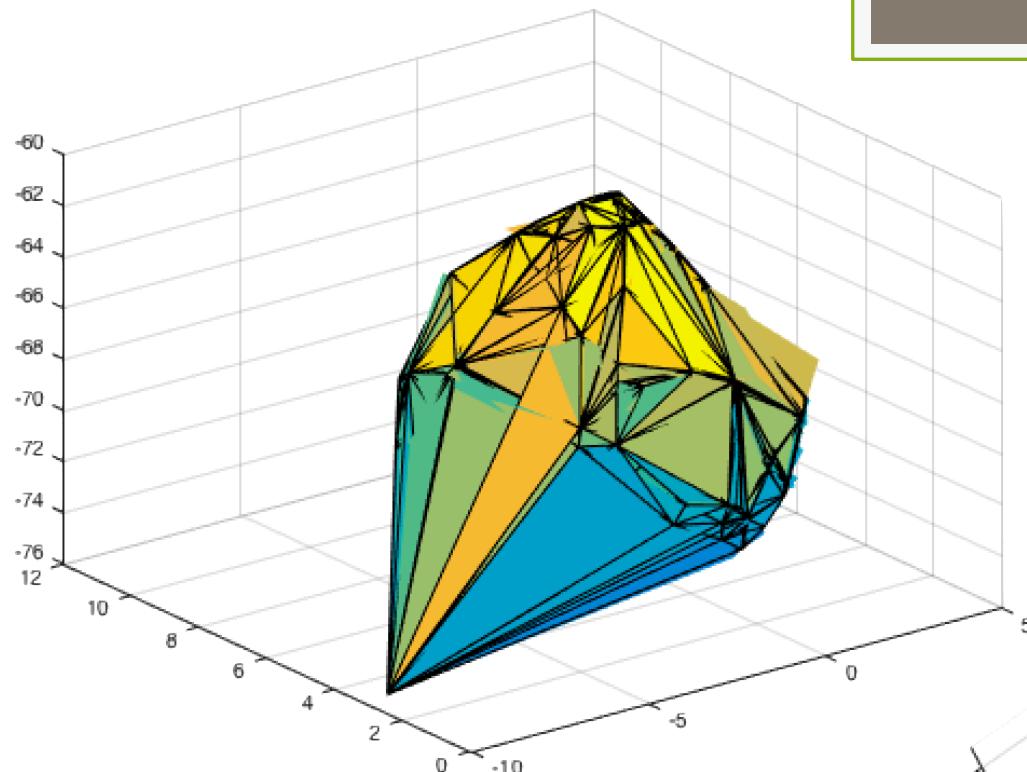
Delaunay Triangulation



Volume



Volume



Future Work

Optimize Differentiation

Model for Color Projection

Piecewise Volumetric Computation

Quantify Volume in mm³

Application to Multi-tree Dataset



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- Dr. Bo Song & Brian Williams
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- Clemson University

