

Information Visualization

W15: Workshop 3 (Final Task)

Graduation School of System Informatics

Department of Computational Science

Naohisa Sakamoto, Akira Kageyama

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Schedule

- W01 4/10 Guidance
- W02 4/11 Exercise (Setup)
- W03 4/17 Introduction to Data Visualization
- W04 4/18 Exercise (JavaScript Programming)
- W05 4/24 Computer Graphics
- W06 4/25 Exercise (Shader Programming)
- W07 5/01 Visualization Pipeline
- W08 5/02 Exercise (Data Model and Transfer Function)
- **W09 5/08 Isosurface**
- **W10 5/09 Exercise (Isosurface Extraction)**
- **W11 5/22 Direct Volume Rendering**
- **W12 5/23 Streamline**
- W13 5/29 Workshops 1
- W14 5/30 Workshops 2
- **W15 6/05 Workshops 3 (Final Task)**

Final Task

- Develop a volume visualization application and explain its characteristics.

Application Examples 1

- Isosurface application
 - Implement user interface for changing isovalue
 - Implement user interface for changing transfer function
 - Remove duplicated vertices for phong shading
 - Integrate with slice planes
 - ...

Application Examples 2

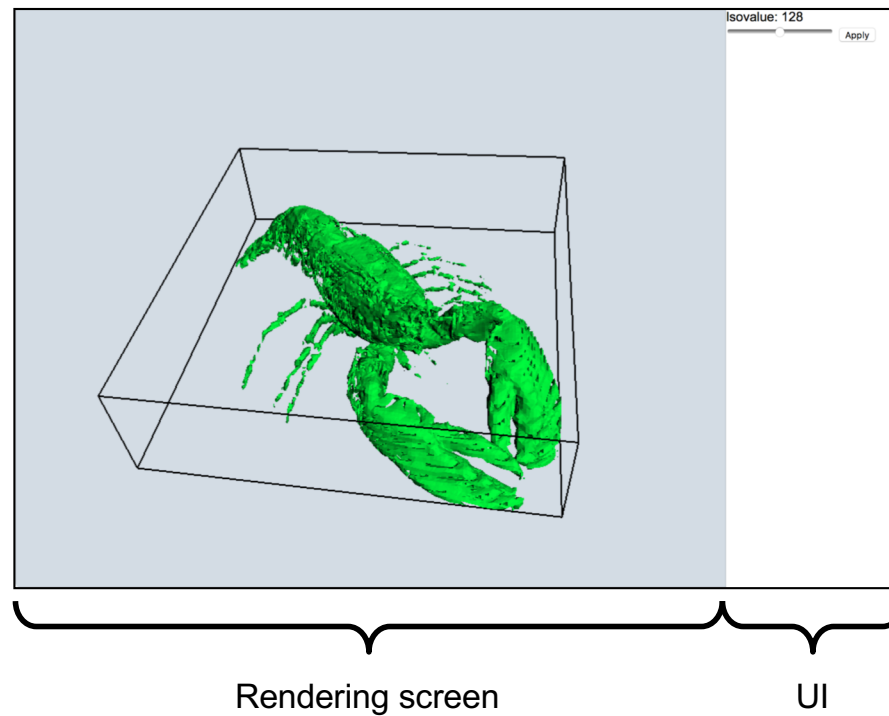
- Volume rendering application
 - Enable shading effects
 - Improve rendering performance
 - Implement user interface for changing transfer function (opacity values)
 - Apply to the Loabster data
 - Integrate with isosurfaces and slice planes
 - ...

Application Examples 3

- Streamline application
 - Implement user interface for setting seed points
 - Implement tube line rendering with shading
 - Lamber/Phong/Blinn-Phong/...
 - Ambient Occlusion
 - Implement stylized line rendering
 - “Visualization with stylized line primitives”
 - Integrate with volume rendering
 - ...

Tips (1/3)

- Dividing the window into the rendering screen region and the user interface region



Tips (2/3)

- Dividing the window into the rendering screen region and the user interface region
 - HTML file

```
<div id="display" style="width: 80%; float: left;"></div>
<div id="controller" style="width:20%; float:left;">
  <label id="label" style="font-family:Arial;"></label>
  <input type="range" min="0" max="1" step="0.01" value="0.5"
id="isovalue"/>
  <button id="change-isovalue-button" style="font-family=Arial;">
Apply</button>
</div>
```


Tips (3/3)

- Dividing the window into the rendering screen region and the user interface region
 - JS file

```
screen.init(volume, {  
    width: window.innerWidth * 0.8,  
    height: window.innerHeight,  
    targetDom: document.getElementById('display'),  
    enableAutoResize: false  
});  
  
...  
  
window.addEventListener('resize', function() {  
    screen.resize([ window.innerWidth * 0.8, window.innerHeight ]);  
});
```

Polling

- Take the poll
 - Student ID Number
 - Name
 - URL to Application
 - URL to Document (PDF)