Visualizing Uncertainty as an Interactive Ensemble

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Workshop on Visually-Supported Reasoning with Uncertainty
Scarborough, UK
Sept. 2
Error Cone Display from US National Hurricane Center
Proposed Ensemble Display
Proposed Ensemble Display
Experimental Evaluation
First Three Cases

Case 1

Case 2

Case 3
Next Three Cases
<table>
<thead>
<tr>
<th>Sector 1 - S</th>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
<th>Case 4</th>
<th>Case 5</th>
<th>Case 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector 2 - SW</td>
<td>0.2123</td>
<td>0.3371</td>
<td>0.3228</td>
<td>0.2380</td>
<td>0.8144</td>
<td>0.1965</td>
</tr>
<tr>
<td>Sector 3 - W</td>
<td>0.1887</td>
<td>0.0828</td>
<td>0.7680</td>
<td>0.0426</td>
<td>0.1547</td>
<td>0.8315</td>
</tr>
<tr>
<td>Sector 4 - NW</td>
<td>0.5059</td>
<td>0.0869</td>
<td>0.0046</td>
<td>0.0478</td>
<td>0.0861</td>
<td>0.9690</td>
</tr>
<tr>
<td>Sector 5 - N</td>
<td>0.5005</td>
<td>0.0632</td>
<td>1.33E-05</td>
<td>0.0294</td>
<td>0.5058</td>
<td>0.2319</td>
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<tr>
<td>Sector 6 - NE</td>
<td>0.8238</td>
<td>0.3003</td>
<td>0.6875</td>
<td>2.17E-05</td>
<td>0.2813</td>
<td>0.7212</td>
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<tr>
<td>Sector 7 - E</td>
<td>0.2791</td>
<td>0.1601</td>
<td>1.0000</td>
<td>0.0017</td>
<td>0.3228</td>
<td>0.7172</td>
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<tr>
<td>Sector 8 - SE</td>
<td>0.2544</td>
<td>0.1303</td>
<td>0.3228</td>
<td>0.5607</td>
<td>0.3228</td>
<td>0.0409</td>
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<tr>
<td>Profile</td>
<td>0.7923</td>
<td>0.0015</td>
<td>1.65E-13</td>
<td>1.41E-06</td>
<td>0.0285</td>
<td>0.9991</td>
</tr>
</tbody>
</table>
Least and Most Similar Cases

Case 3
Least Similar

Case 6
Most Similar
Adding Interaction
Adding Interaction

33 Hours
When are Ensembles Appropriate?

- How important are black swans?
- Does uncertainty representation confound with other properties?
- Does uncertainty affect spatial layout?
FIN