Understanding Tumour Evolution of a Highly Disseminated Lung NET through Multi-player Augmented Reality Visualisation

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Oral Presentation: Thursday 15:05 – 15:20 @ Meeting Room 111

Background

• Understanding tumour heterogeneity and evolution remain fundamental challenges in cancer.
• Decreasing DNA sequencing costs have enabled a more multi-site cancer genomic and evolutionary studies.
• Novel visualization techniques are required to better understand and investigate complex metastatic cancer studies.

A Rare Research Opportunity

A patient with highly disseminated lung neuroendocrine tumour requested and consented to rapid autopsy, providing an opportunity to study tumour evolution and heterogeneity in a single patient. We have created an interactive Augmented Reality visualisation to follow disease progression and genomic data by anatomical site.

Clinical Timeline

Study Complexity

<table>
<thead>
<tr>
<th>Study Complexity</th>
<th>Methods</th>
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<tbody>
<tr>
<td>A call for novel visualisation strategies</td>
<td>3D Skeletal Model Segmented from CT Scans</td>
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<td>10 years of clinical data</td>
<td>3D Models Across Key Time-Points Extracted from CT Scans</td>
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<td>89 tumours</td>
<td>3D Spheres as Locations of Genomic Sampling Sites</td>
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<td>32 sites with genomic data</td>
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<td>14 anatomical locations</td>
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Augmented Reality

• Microsoft Hololens: a self-contained holographic computer
• Presents a holographic projection overlaid into the real world
• Interactive, using hand gestures and voice commands
• Highly collaborative, with many users able to discuss and interact at the same time.

Experience Cancer in Augmented Reality: Invitation to Participate

Session running:

Come and have a go, or watch while others do