Virtual Anatomies

Module Lead: Dr Laura Fitton
Term: Autumn
Level / Credits: Level 7 / 10 Credits
Module status: Elective module

This module will provide hands on experience and a detailed understanding of virtual anatomy, reconstruction and musculoskeletal modelling. Weekly topics include: musculoskeletal imaging modalities, visualization and manipulation, rendering, slicing, landmarks, warping, asymmetry and reflection, reconstructing images of extant and fossil remains simulating musculoskeletal function and bringing morphometrics and functional simulation together.

Learning Outcomes

By the end of this module, you will be able to:

1. Critically appraise imaging modalities in relation to the scientific question at hand.
2. Critically assess the benefits and drawbacks of different approaches to image reconstruction including segmentation, warping, reflection and symmetry methods.
3. Use appropriate methods to reconstruct a 3D virtual musculoskeletal image.
5. Provide a critical appraisal of FEA in relation to simulation of function.
6. Indicate how MDA, FEA and morphometrics might combine in studies of musculoskeletal form and function, critically evaluating these potential combinations.

Module Aims

The aims of this module is to introduce you to the theory and practice of modern imaging, modelling and visualisation methods ("virtual anatomies") and their application to research questions in human and primate evolution.

Module Workload / Assessments

<table>
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<tr>
<th>Lectures:</th>
<th>4 hours</th>
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<tbody>
<tr>
<td>Practicals:</td>
<td>12 hours</td>
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<tr>
<td>Seminars:</td>
<td>10 hours</td>
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<td>Self-Directed</td>
<td>50 hours</td>
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| Learning:          | Assessment: Practical reconstruction and methodology (summative) – 100%
|                    | Peer assessed presentation of a chosen topic (formative) |