



Hamilton Institute

The Brain is an Embedding Machine

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Abstract:

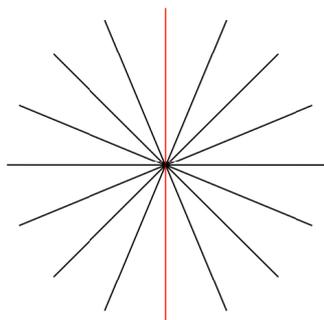
Neural responses are often generated by the physical movement of an object or a limb. Each such set of responses corresponds a point on a smooth geometrical surface. To be able to manipulate such a representation the brain assigns coordinates to every point on the surface – a procedure known as embedding.

In the first part of this talk the properties of the early visual system are exploited to produce a model of coordinate space based on features such as colour, orientation and movement. The feature model has the advantage over the geometric model that it is not restricted to 2 or 3-dimensional pictorial representations.

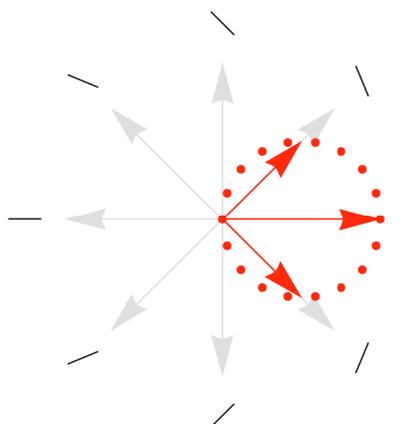
The neural mechanism is highly suited to embedding. In the second part of the talk the feature based coordinate space will be used to explore the neural embedding of the sensory stimuli encountered in binocular vision and in the movement of the eye.

In the final part of the talk the limitations on our ability to see objects arising from the neural embedding procedures will be outlined and in particular, what can be 'seen' of the shape of surfaces embedded in more than three dimensions.

Visual stimulus



Neural embedding



Venue: Seminar Room, Hamilton Institute, Rye Hall,
NUI Maynooth

Time: 2.00 - 3.00pm (followed by tea/coffee)

Travel directions are available at www.hamilton.ie