Title: Visualisation of Animal Tracking Data

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Abstract:

The study of animal behaviour is a key area of biological research. Studying the deep underwater behaviour of marine wildlife poses special challenges. Advances in technology make it possible to attach tri-axial accelerometer recording devices to animals which remotely record movement. Biologists at Swansea University use these devices for collecting data on animal behaviour. Currently this data is plotted on large multiple two dimensional time series plots. By looking for signature patterns and combining plots together this can be mapped to an animal activity. However, manual inspection of graphs is very time consuming with no automatic way to select areas of interest and is commonly subject to errors. The aim of this project is to create advanced visualisations which assist in and enhance data analysis including the automatic extraction and visualisation of patterns of animal behaviour. Data will be visualised in more depth, such as displaying behavioural patterns which previously was not possible and combining data attributes together. This includes spherical scatter plots, multidimensional histograms and other advanced visualisation techniques that enhance the understanding of marine wildlife behaviour.

References:

- Visualisation of Sensor Data from Animal Movement - Edward Grundy, Robert S. Laramee Rory P. Wilson, Mark W. Jones and Emily L.C. Shepard.
- Prying into the intimate details of animal lives: use of a daily diary on animals - Rory P. Wilson, E. L. C. Shepard, N. Liebsch.
- Identification of animal movement patterns using tri-axial accelerometry - Emily L. C. Shepard, Rory P. Wilson, Flavio Quintana , Agustina Gómez Laich, Nikolai Liebsch, Diego A. Albareda, Lewis G. Halsey, Adrian Gleiss, David T. Morgan, Andrew E. Myers, Chris Newman, David W. Macdonald.
- Graphical Perception of Multiple Time Series - Javed, W. McDonnel, B. Elmqvist, N
- Interactive Data Visualization, Foundations, Techniques, And Applications - Daniel Keim Matthew Ward, Georges Grinstein.