# Research Interests
Visual Analytics

Dr. Phil Legg

A (very) quick background…

- PhD: Multi-modal image registration (Cardiff) – *how can a computer automatically align images of different appearance?*

- PDRA: Sports Video Visualization (Swansea) – *how can data visualization improve player performance and coaching capabilities?*

- PDRA: Insider Threat Detection (Oxford) – *how can machine learning and visual analytics enhance capabilities of recognising malicious activity?*

Research Interests

Data Visualization and Visual Analytics

- Enhancing visual representation and interaction to enable effective insight and understanding in a manageable timeframe.

Machine Learning

- Learning from data to characterize patterns and trends.

Image Processing and Computer Vision

- Manipulation of image and video data sources.

Research Interests

Visual Analytics

"the science of analytical reasoning facilitated by interactive visual interfaces"

Visual Representation
- Given some data, what is the 'best' way to depict this?

Analytical Reasoning
- Given some data, what is the 'best' way to reason about this?

Interaction Design
- Given some data, what is the 'best' way to interact with this?

- Information / Scientific Visualization
- Perceptual Factors
- Data Mining
- Machine Learning
- Complexity reduction
- Cognitive Factors
- Decision / sense - making
- HCI
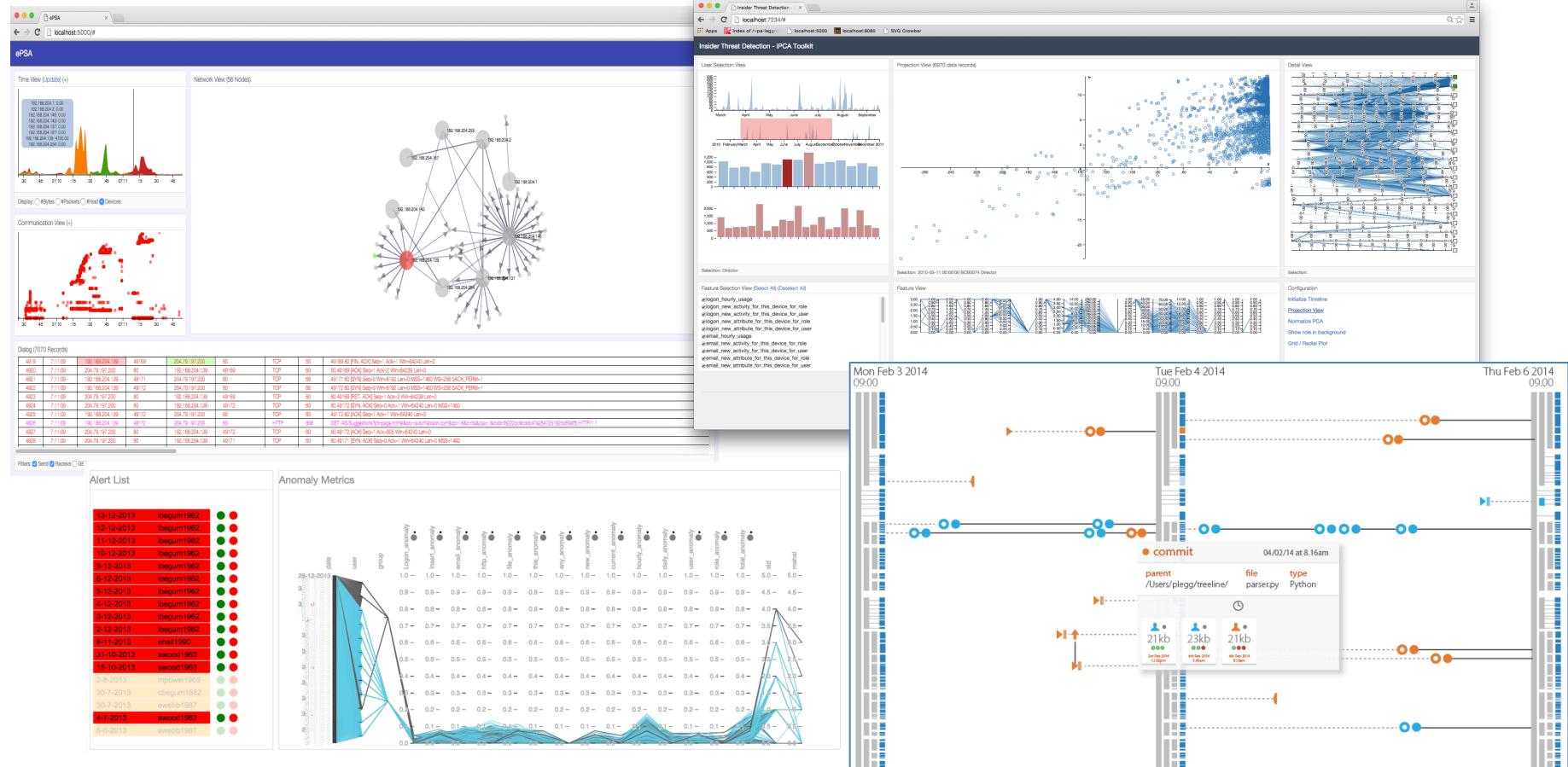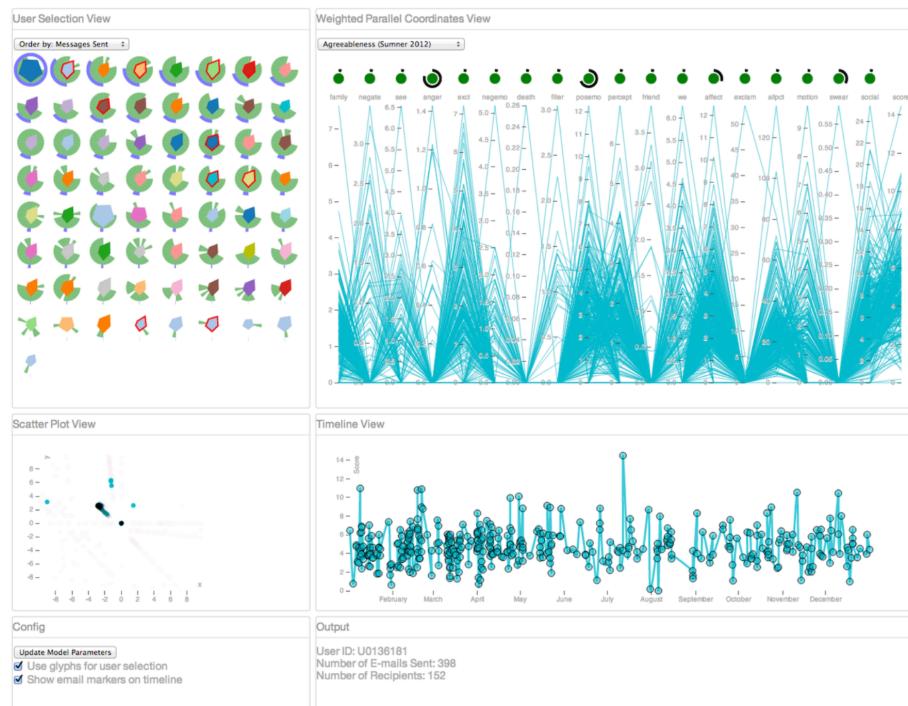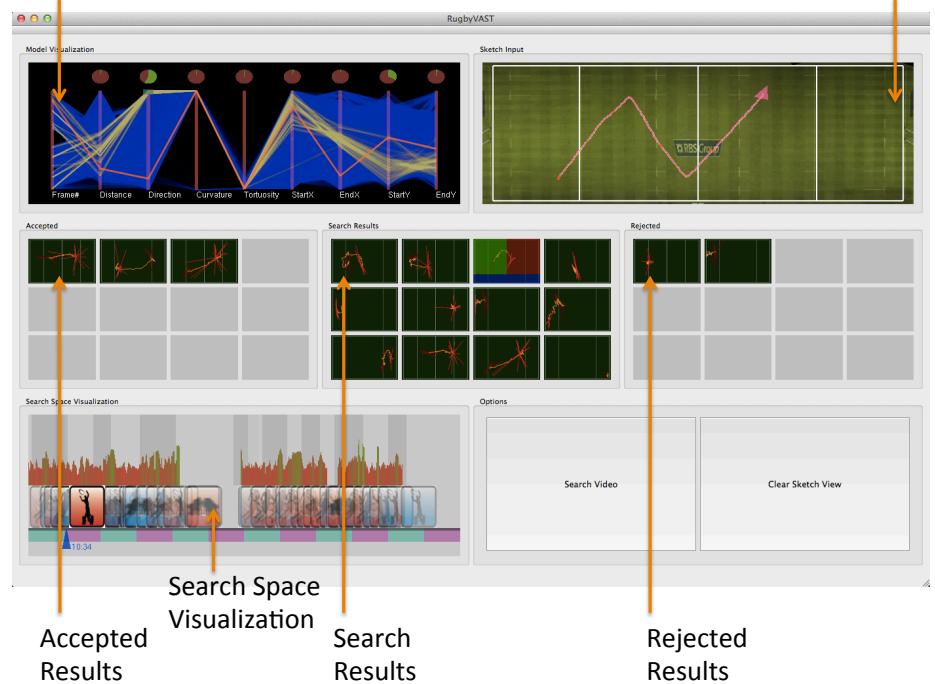
Examples

Examples

Model Visualization

Sketch Input

Accepted Results

Search Space Visualization

Search Results

Rejected Results

More examples on YouTube / Twitter / Homepage ….

Future Directions
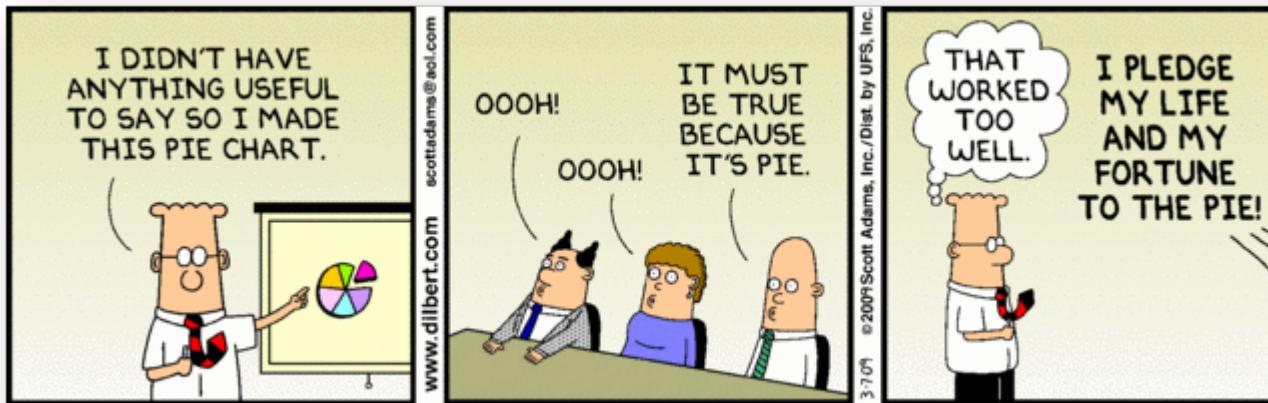
- How do we know that we perceive visualizations in the 'correct' way?
  - Visual communication theory
- How do we know that ML algorithms are doing what we would like them to do?
  - Interactive/Visual AI
- How do we utilize the capability of the machine and the intuition of the human?
  - Visual analytics + ML

Journals and Conferences

- IEEE Trans. Vis. Comp. Graphics
  - IEEE Vis (March)
- Comp. Graphics Forum
  - EuroVis (December) Eurographics (September)
- IEEE VizSec
- IEEE Computer Graphics and Applications
- Computers and Graphics
- Visual Computer
- Computational Visual Media
- IVAPP (September)
- EGUK Computer Graphics and Visual Computing (June)
- IEEE Vis Arts Program – *invites to Leonardo, IEEE CG&A*

- *News / Media – impact case studies*

Thanks for listening!

E-mail: phil.legg@uwe.ac.uk

Twitter: @_plegg

Room: 2Q17