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Workstation Analytics in Distributed Warfighting Experimentation:

Results from Coalition Attack Guidance Experiment 3A

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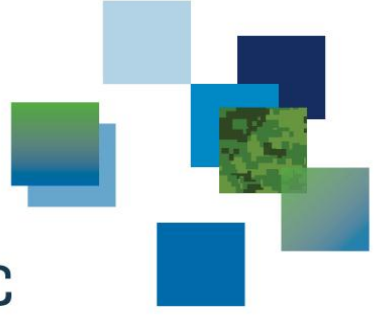

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Data Collection

- Log files
- Personal Storage Tables
- Chat server database
- Surveys
- Human observation
- 

Workstation Analytics 

  - Mouse click details
  - Editable text
  - Keystroke details
  - Mouse movement
  - Network activity
  - Microphone recordings
  - Screenshots
  - Video screen recordings

Quantifying Workstation Activity Data

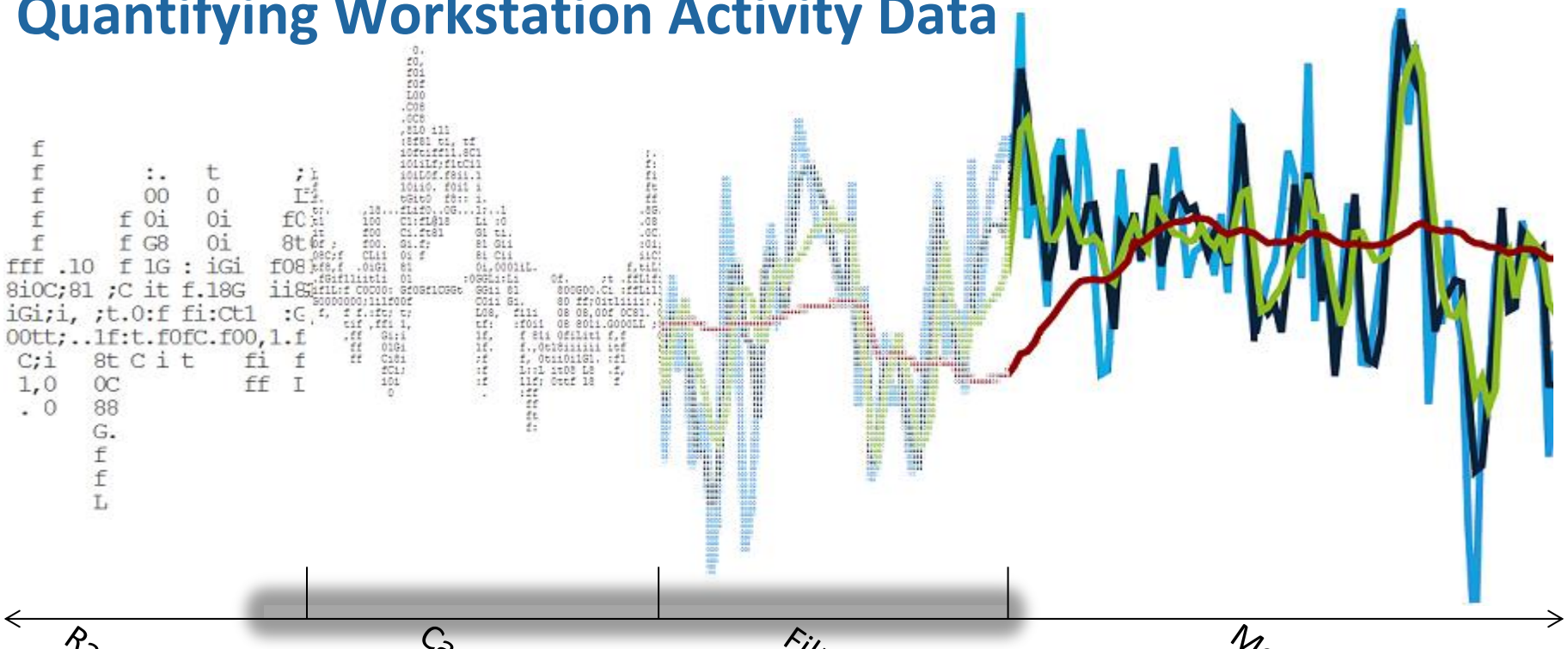


Image source: http://www.sentdex.com

Sample Thea Data From CAGE 3A

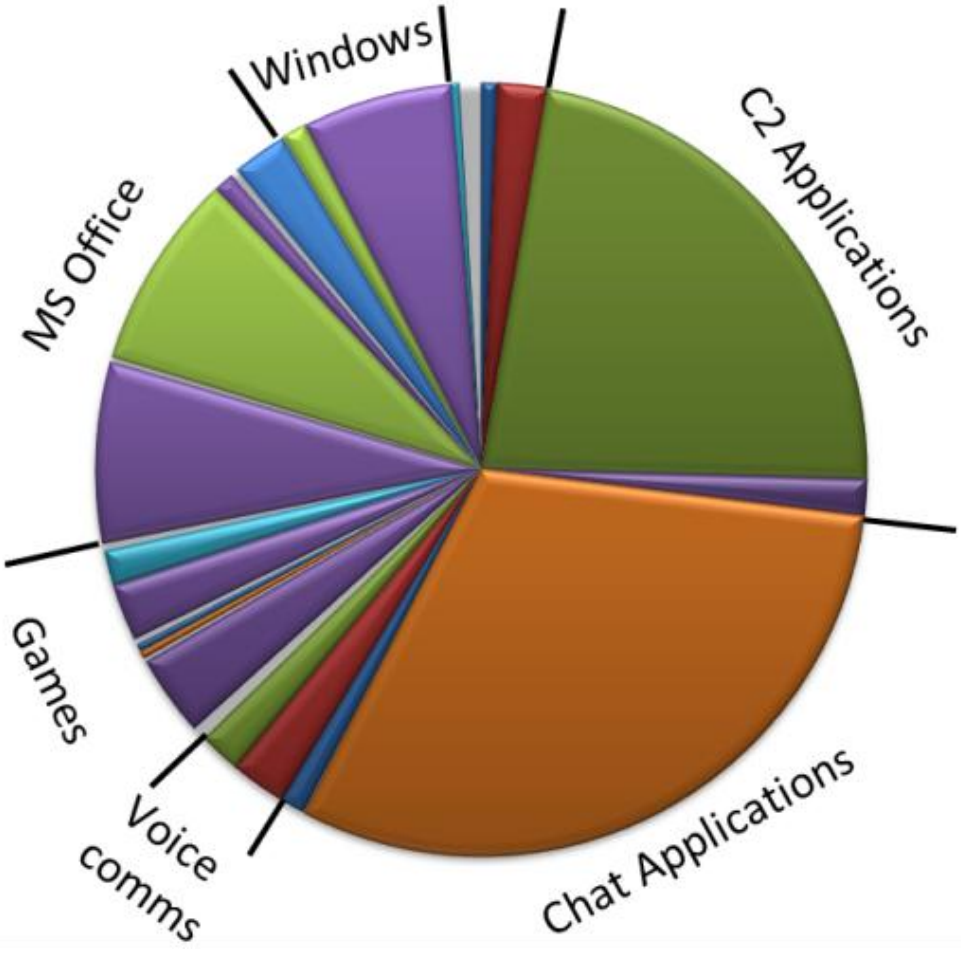
- Application Usage
- Behavioural Biometrics
- Process Mining
- Natural Language Programming

Application Usage (1 of 2)

- Percentage of time spent in each application, i.e. time spent with application in the foreground

OR

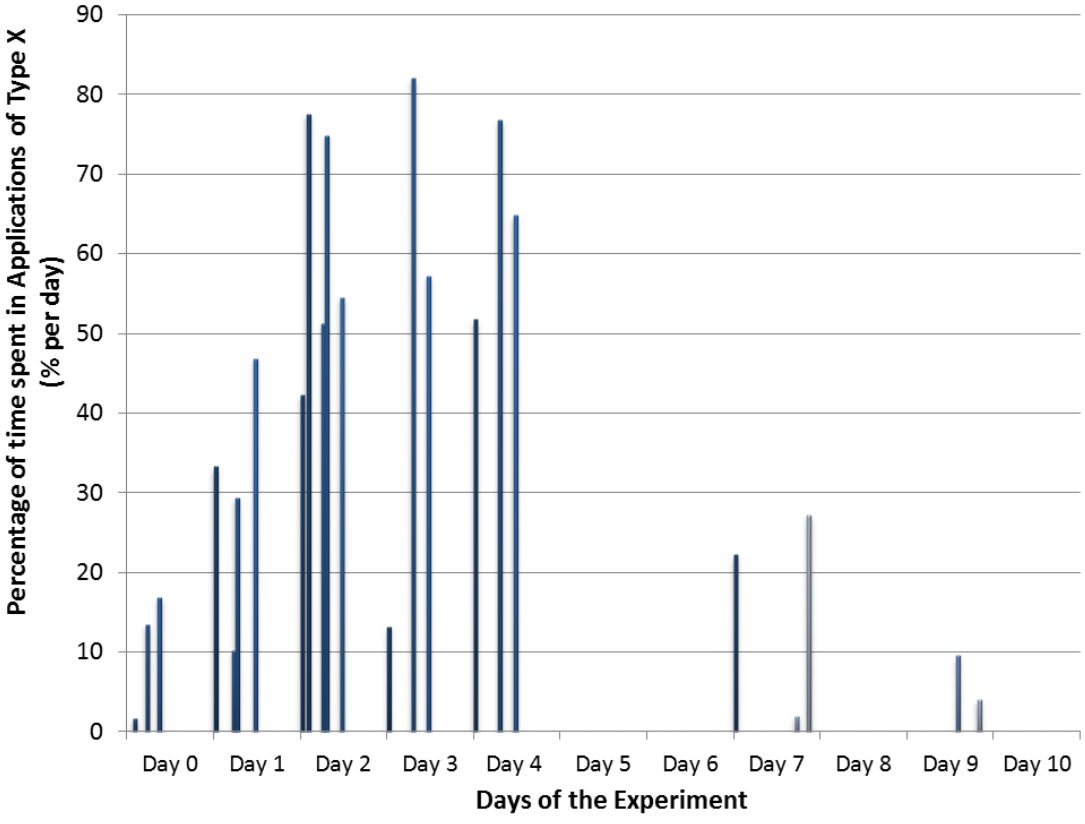
- Percentage of mouse clicks and keystrokes in each application



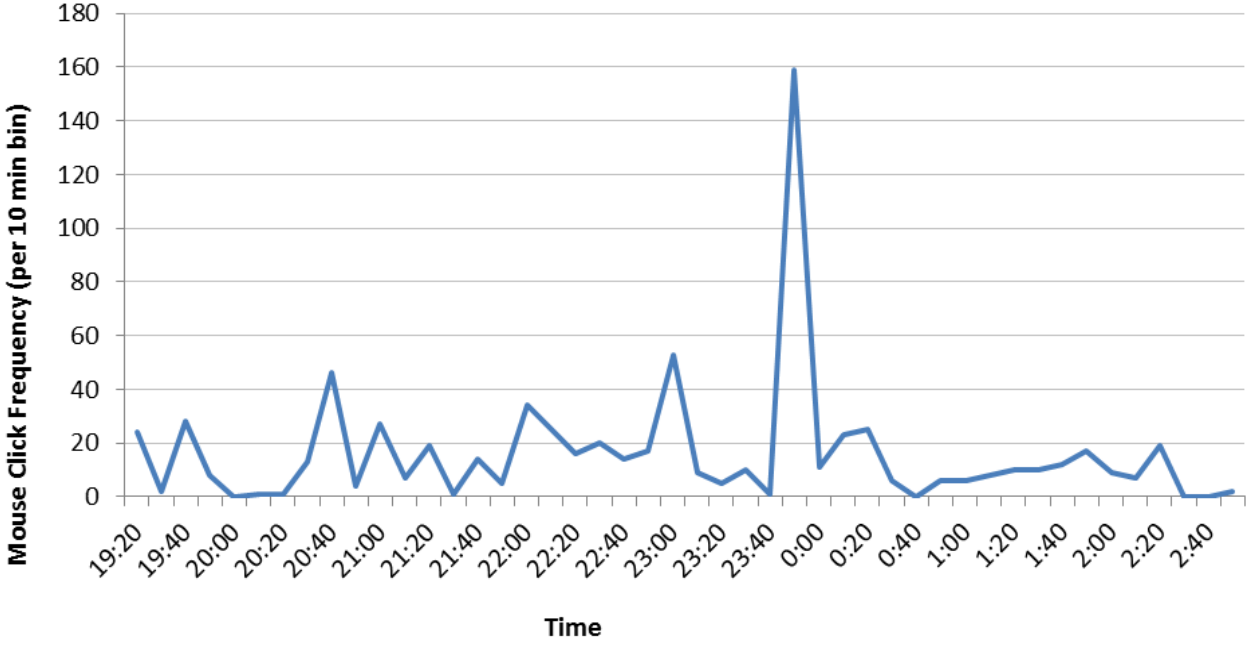
Application Usage (2 of 2)

Application usage can help:

- Measure the value of tool to an operator
- Operator performance analysis
- Policing/tracking activity



Behavioural Biometrics



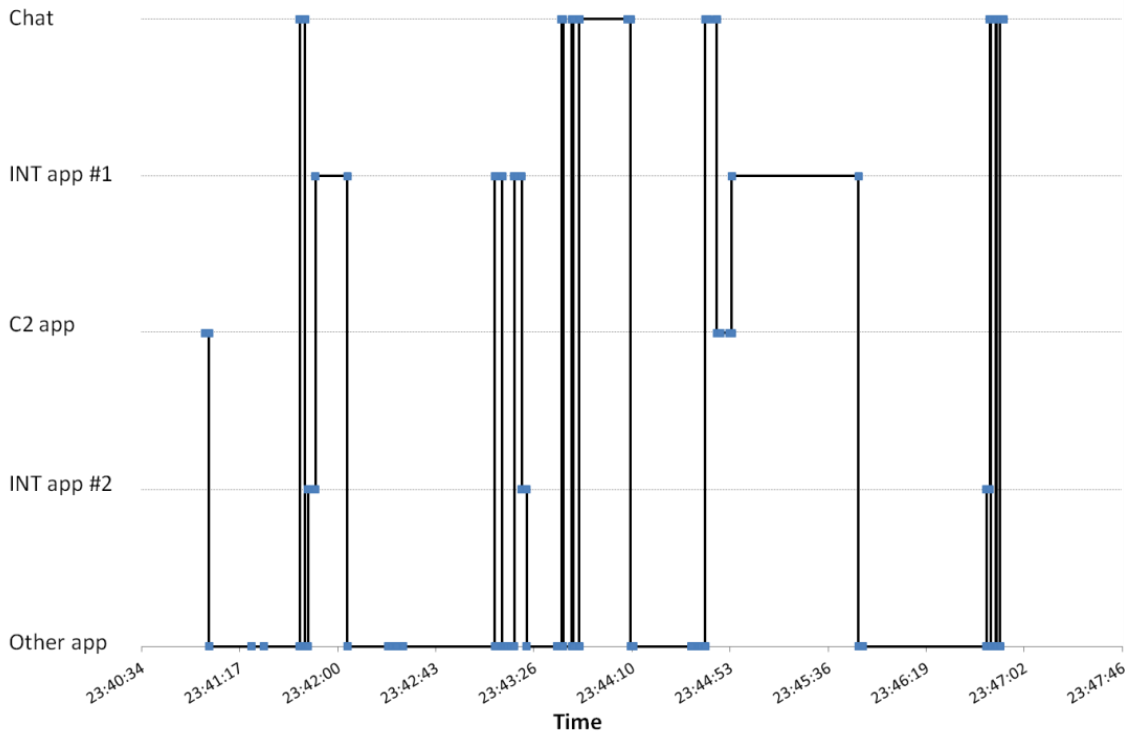
- Mouse velocity/acceleration
- Time between key presses
- Distance travelled between mouse clicks
- Mouse click frequency

Process Mining – Individual User

- Track the sequence of applications used by a single user

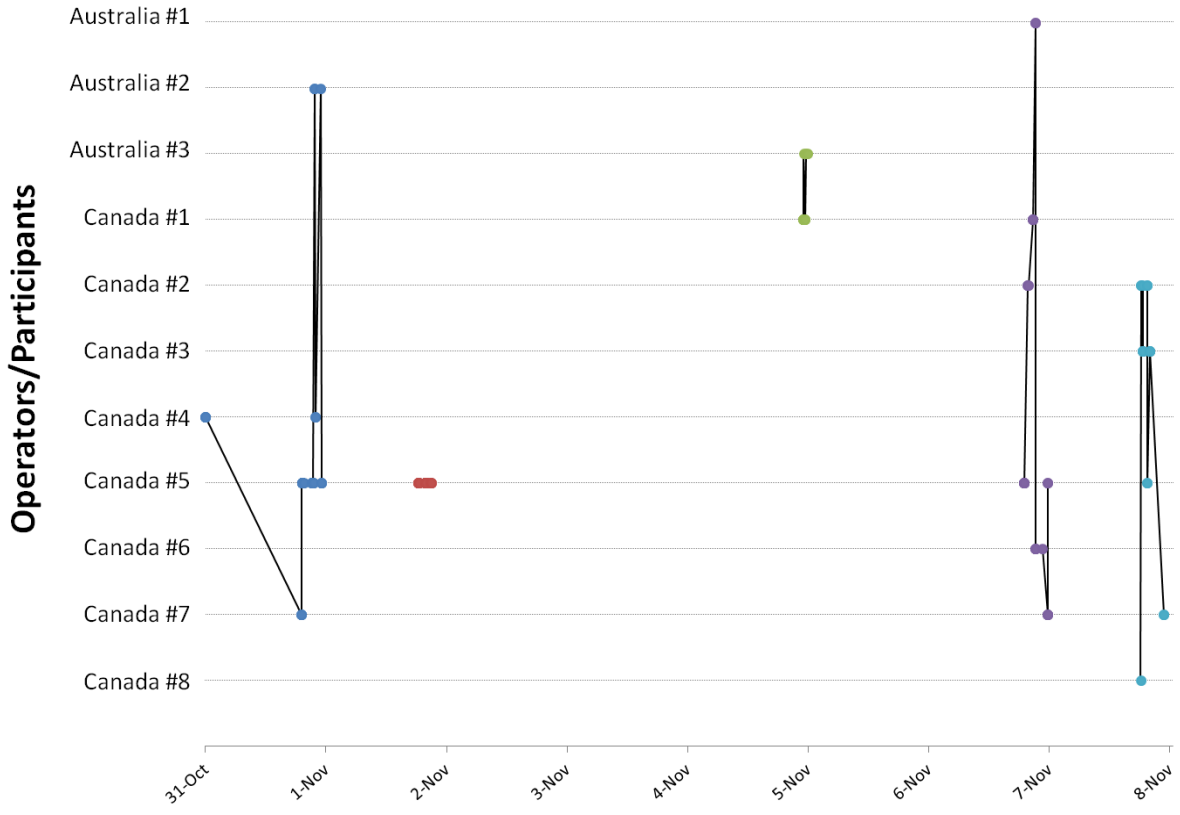
This sequence of applications can be used to:

- Discover and record Standard Operating Procedures (SOPs)
- Detect when a procedure occurred

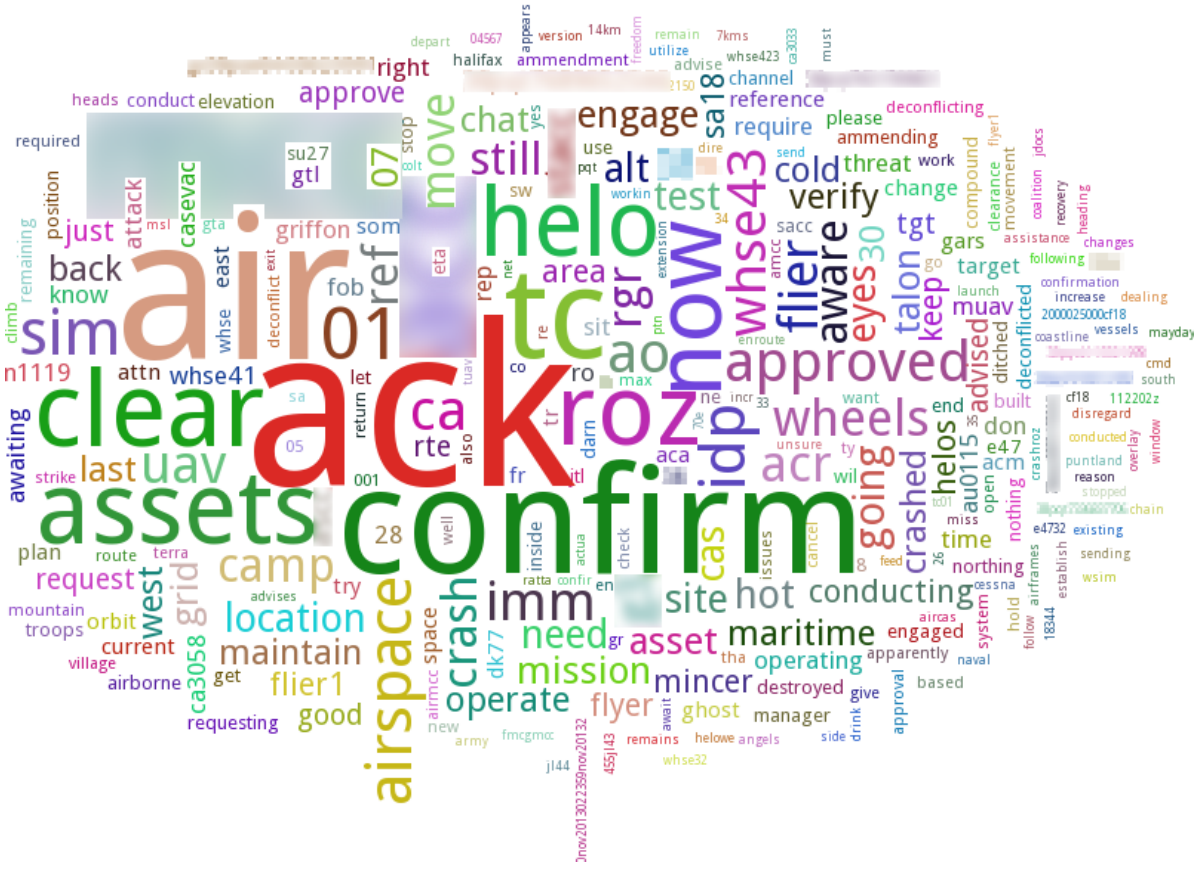


Process Mining – All Participants

- Track the participants that referred to a particular target
- Discover or detect a process as it occurs across the network



Natural Language Processing



Future Work

- Use of Thea in CAGE 3B, January 2015

Further development of analysis tools for the collected data
(a tool we are calling NESTOR):

- Investigate the inference of various human factors metrics from behavioural biometrics data collected
  - Workload, fatigue
- Process mining and automatic process detection
- Natural language processing
  - Building language and acoustic models for speech recognition

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