EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 15/09/2017 **Last diary date:** N/A

Objectives:

- Complete first draft of IPO.
- Continue reading about Network Intrusion Detection and Two Stage Classifiers
- Investigate WEKA software.

Progress:

- Decided upon language
- Picked several algorithms to implementation
- Read some research papers

Supervisor's Comments:

EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 21/09/2017 **Last diary date:** 15/09/2017

Objectives:

- Correct issues with IPO
- Continue reading about network intrusion detection and two stage classifiers
- Investigate WEKA software more
- Begin outlining structure of the literature review

Progress:

- Wrote first draft of IPO
- Explored WEKA
- Read research papers

Supervisor's Comments:

EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 28/09/2017 **Last diary date:** 21/09/2017

Objectives:

- Continue collecting citations
- Begin writing literature review

Progress:

- Finalized IPO
- Collected more citations to do with intrusion detection and ensemble classifiers.
- Investigated WEKA
- Outlined literature review structure

Supervisor's Comments:

EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 05/10/2017 **Last diary date:** 28/09/2017

Objectives:

- Continue writing literature review

Progress:

- Collected more citations
- Began writing literature review

Supervisor's Comments:

EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 12/10/2017 **Last diary date:** 05/10/2017

Objectives:

- Continue writing literature review
- Begin implementing the k-nn algorithm

Progress:

- Made progress on literature review about history of intrusion detection
- Collected references regarding specific algorithms

Supervisor's Comments:

EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 20/10/2017 **Last diary date:** 12/10/2017

Objectives:

- Go into more detail regarding the negative selection algorithm and neural networks in literature review
- Back up some points made within the literature review

Progress:

- Began section regarding algorithms within the literature review

Supervisor's Comments:

EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 26/10/2017 **Last diary date:** 20/10/2017

Objectives:

- Add a conclusion to literature review
- Finish search strategy section in literature review
- Begin implementation of k-nn algorithm

Progress:

- Finished literature review section on algorithms
- Added a section in literature review about research contribution

Supervisor's Comments:

EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 02/11/2017 **Last diary date:** 26/10/2017

Objectives:

- Finish first draft of literature review
- Create the outline for the entire dissertation
- Update project schedule Gantt Chart

Progress:

- No progress was made this week as I had two coursework deadlines at the conclusion of the week

Supervisor's Comments:

EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 09/11/2017 **Last diary date:** 02/11/2017

Objectives:

- At some point in the future update my literature review using all of the feedback within the interim report this includes
  - More up to date references
  - Justifications for different algorithms and machine learning in general
  - Switching datasets from KDD 99 to a more recent/amended one
- Begin work on a k-nn classifier
- General research on python machine learning and GUI libraries

Progress:

- Finished first draft of the literature review
- Updated Gantt Chart to better reflect current project schedule.
- Created outline for dissertation

Supervisor's Comments:

EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 16/11/2017 **Last diary date:** 09/11/2017

Objectives:

- Improve k-nn classifier by finding alternative to onehot encoding.
- Begin creating the GUI

Progress:

- Set up Github repository
- Researched and implemented preparing a dataset for processing
- Implemented a basic k-nn classifier
- Researched different GUI options

Supervisor's Comments:

EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 23/11/2017 **Last diary date:** 16/11/2017

Objectives:

- Continue to attempt to improve knn performance
- Continue work on creating GUI
- Implement multi-layer perceptron classifier

Progress:

- Began creating a simple GUI to start learning PyQt
- Began writing simple unit tests

Supervisor's Comments:

EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 09/01/2018 **Last diary date:** 23/11/2017

Objectives:

- Implement a multi-layer perceptron classifier
- Continue creation of a GUI

Progress:

- No progress was made over the holiday period

Supervisor's Comments:

EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 16/01/2018 **Last diary date:** 09/01/2018

Objectives:

- Implement a support vector machine instead of negative selection classifier due to time constraints
- Continue work on the GUI
- Research feature selection and improving classifier performance

Progress:

- Created a simple multi-layer perceptron classifier
- Implemented a large section of the GUI
  - Dataset selection
  - Field type categorising
  - Custom classifier selection
  - Basic window layouts

Supervisor's Comments:

EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 23/01/2018 **Last diary date:** 16/01/2018

Objectives:

- Research statistical significance testing
- Implement ability to run and compare several classifiers
- finish graphing and displaying results

Progress:

- Implemented support vector machine classifier
- Added basic graph to GUI
- Added K fold cross validation
- User creation of template classifiers
- Linked back end computation to the GUI
- General bug fixes

Supervisor's Comments:

EDINBURGH NAPIER UNIVERSITY

SCHOOL OF COMPUTING

PROJECT DIARY

Student: Jack Anderson **Supervisor:** Simon Powers

Date: 30/01/2018 **Last diary date:** 23/01/2018

Objectives:

- Finish displaying results in GUI
- Implement ability to run classifiers several times and average results for stochastic classifiers such as MLP
- Begin gathering results

Progress:

- Added ability to run several classifier configurations at once
- Added graphing of classification results and selection of specific classes
- Fixed major bug regarding two stage classification results

Supervisor's Comments: