Research Proposal

Title: identify functionality in black box systems using neural networks.

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Degree: MMath

Background

distances - DTW, pearson

clustering algorithms - k means, dbscan, gmm

other - hmm, autoencoders

Aim

Given no a priori knowledge of an I2C black box system, identify the acceptable input grammar. A novel approach to model learning using machine learning. by sending I2C messages and analyzing the power trace with neural networks. Uses: black box HIL testing by manufacturers, finding undocumented functionality for security purposes, input grammar for fuzz tests, inputs for polygraph

Method

In this section you should outline how you intend to go about accomplishing the aims you have set in the previous section. Try to break your grand aims down into small, achievable tasks. Try to estimate how long you will spend on each task, and draw up a timetable for each sub-task.

Software and Hardware Requirements

Outline what your specific requirements will be with regard to software and hardware, but note that any special requests might need to be approved by your supervisor and the Head of Department.

Overall, you should aim to produce roughly a two page document (and certainly no more than four pages) outlining your plan for the year.

References

[1] D. E. Knuth. *The TEX book.* Addison-Wesley, Reading, Massachusetts, 1984.

[2] L. Lamport. *LATEX : A Document Preparation System.* Addison-Wesley, Reading, Massachusetts, 1986.

[3] Ken Wessen, Preparing a thesis using LaTeX , private communication, 1994.

[4] L. Lamport. Document Production: Visual or Logical, *Notices of the Amer. Maths. Soc.*, Vol. 34, 1987, pp. 621-624.