Linear and Quadratic Programming by neural networks for financial planning applications
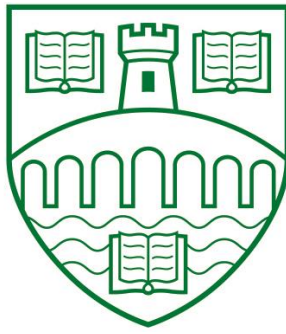
Kyriakos Vougioukas
MSc in Big Data

UNIVERSITY *of* STIRLING

Abstract

-This project is in collaboration with the FinTech company, Bambu, based in Singapore. Bambu suggested financial planning application.

Background

-Solving linear and quadratic programming problems of large size is considered to be one of the basic problems encountered in operations research

-In 1986, Tank and Hopfield [3] proposed a recurrent neural network for solving linear/quadratic programming problems which was mapped onto a closed-loop circuit
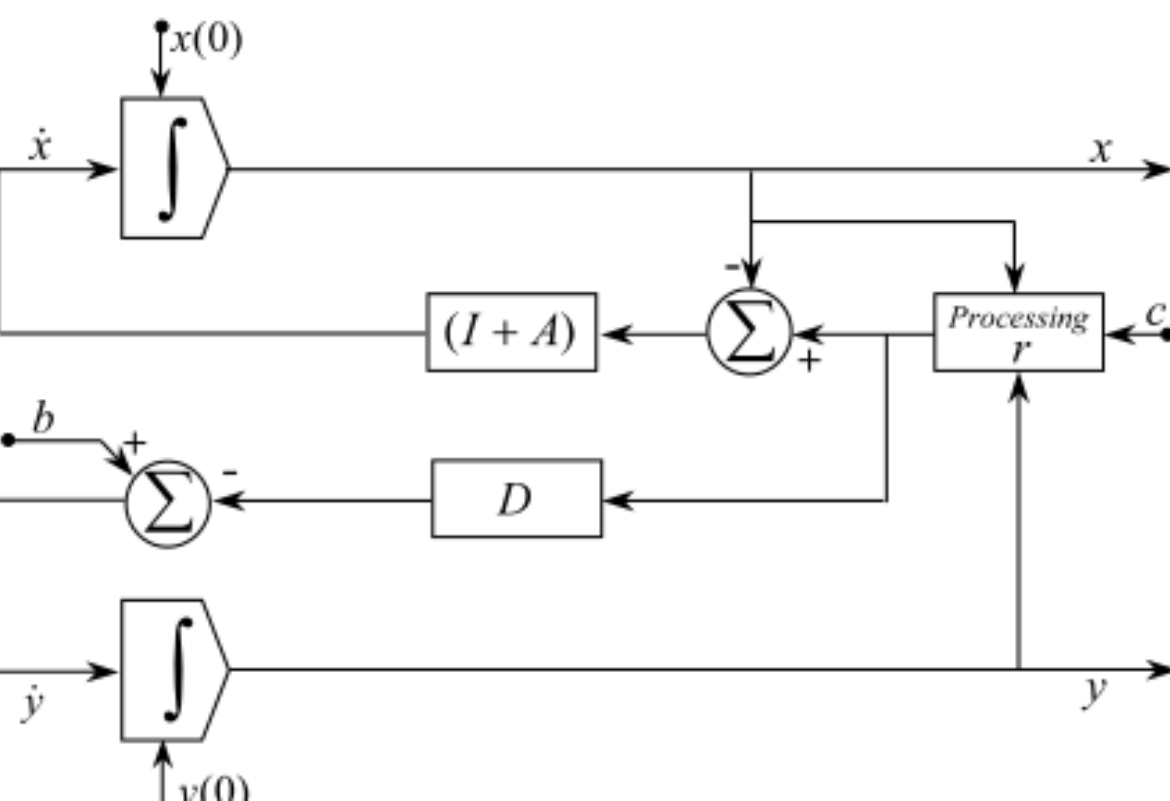
Methods

-The recurrent network Ghasabi-Oskoei Mahdavi-Amiri is an optimized version based initially on Tank and HopField and is implemented in our financial application
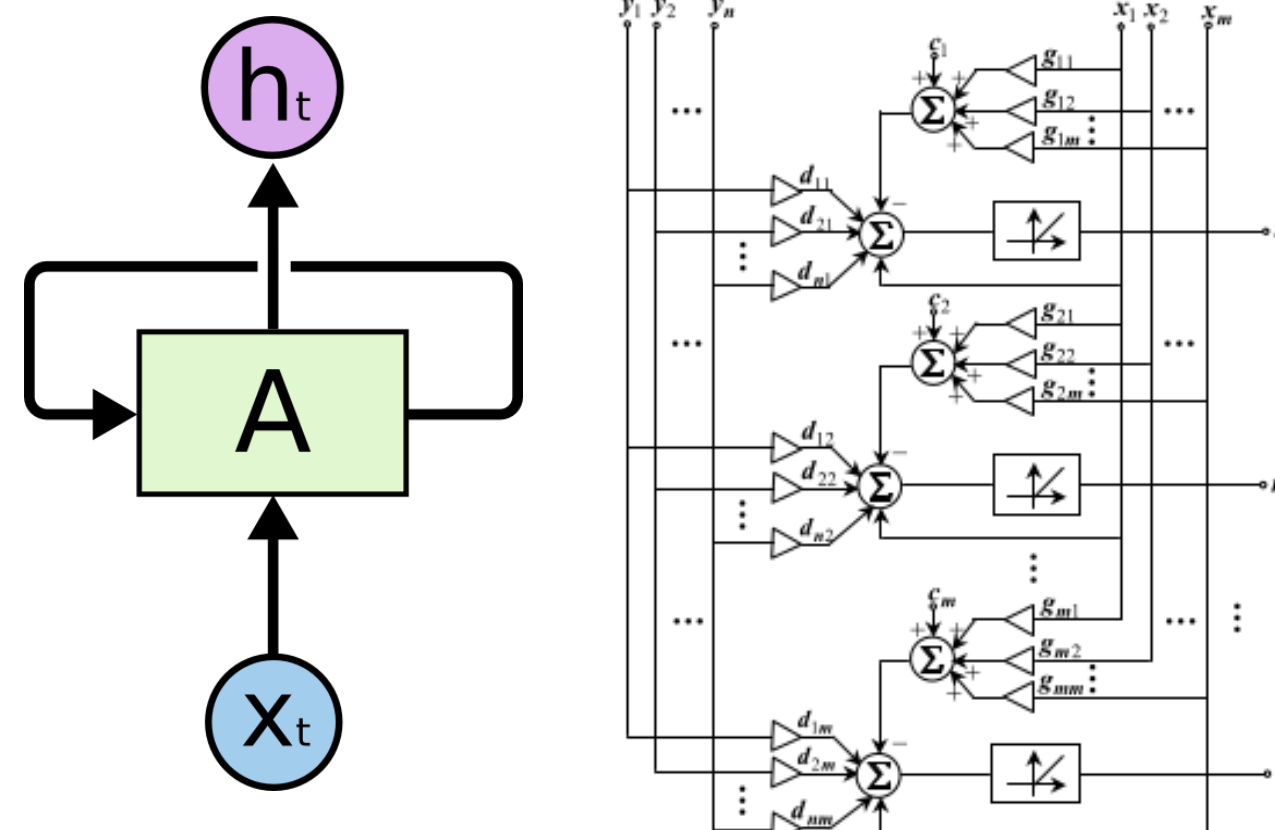
Application Design

-The application:
-Is using open source tools.
-Has a GUI build with PyQT4.
-Implementing Recurrent neural network
-Graphical results with MatPlotLib

Application Functionality

-Finance Employee is using the application in order to calculate what will be a successful investment.
-Factors considered are:
     -Total Lump Sum,
     -maximum installment per month,
     -type of investment,
     -returning profit per investment.