Linear and Quadratic Programming by neural networks for financial planning applications

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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











matpl tlib



	VOUGIOUKAS				
Lump Sum	300000				
Monthly Deposit	250				
Name	Retirement		Education		Car
Target Sum	1000000		100000		50000
Years to Goal	25		10		2
Investment Risk	7 %		5	%	2
Initial Lump Sum	0.00		63348.49 0.00		54633.2
Montly Deposit					0.00
Accumulator	1001247.20		104335.57		56860.9
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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.



