Stock Market AI Neural Network

Input data

10 years of an individual stock value data, with each data point being the closing value of each working day. Each stock value is assigned a time (t), with the first stock being at time (t = 0), and the next being (t = 1), such that the increment is (t = (t + 1)).   
  
The data set will thus have 1 column of the stock value (stockValue), and one column of the time (t).

Game logic

The player (AI) has two/three options at the start of each round, depending on the initial condition:  
  
1. If the AI has not purchased stock, and holds a total value of > 1,000 coins, then the AI can either: buy (b) or do nothing (n)

2. If the AI has purchased stock, where stockTotal has a coin value > 1,000, then the AI can either: buy (b), sell (s), or do nothing (n)

Each option has the following rules:  
  
1. Buy (b) gives the AI an option to buy a stock of fixed value (1,000 coins). The AI may only purchase a stock in this specified chunk, as giving it flexibility in amounts to buy, would be complex. The 1,000 coin value is then quantified in units of stock (stockBought). This is done by taking the column of the stock value, and reading the necessary row that correlates with the time (t) of that particular round. The stockBought variable is then added to the stockTotal variable. 1,000 coins are then subtracted from the totalCoins variable.

2. Sell (s) gives the AI an option to sell a stock of fixed value (1,000 coins). The AI may only sell a stock in this specified chunk. The 1,000 coin value is then quantified in units of stock (stockSold). This is done by taking the column of the stock value, and reading the necessary row that correlates with the time (t) of that particular round. The stockSold variable is then subtracted from the stockTotal variable. 1,000 coins are then added to the totalCoins variable.

3. Do Nothing (n) is essentially a pass. Where no coins or stock are exchanged.

Regardless of the AI option, the: stockValue; stockTotal; totalCoins; t, variables, will be calculated and addressed in each round.

The specified initial condition is called upon at the start of each round, where the AI must make a decision from the options specified above.

Each round is separated by an interval of time (t). The initial round is t = 0. This is the start of your data set. A round is played in increments of 7 days (t = 7), such that at each end of loop, t = (t +7). The loop is then stopped at t = maxTime, where maxTime is the total number of days you want the game to last (maxTime = 252 is 1 year on the stock exchange for example). An example loop would be:  
  
Do ()

{

%your function here

t = (t + 7)

}  
while (t <= maxTime)

The AI starts with a set level of currency (totalCoins = 10,000), where (1 coin = 1 dollar). At the start of each round, the AI must choose an option from the parameters set above. Only 1 option can be selected per round.

Game Win/Lose rules

The Win/Lose condition is addressed at the end of the stock value data set. That is, when t = maxTime.

A win of the game is classified as beating the previous best score (bestScore), where the initial best score is set to bestScore = 10,000. bestScore depends on the totalCoins and the stockTotal variables. The stockTotal variable gets converted into coin value at this point, and this value gets added to totalCoins. The if statement check for winning will look like this:  
  
if (totalCoins >> bestScore)

{

%win condition met

maxTime = maxTime + 252 %extends the window of time

bestScore = totalCoins

}

else if ()

{

%lose condition met

nextLevel = false

t = 0 %resets the time back to zero

}

The previously specified loop would be repeated until maxTime = 2520, which is 10 years of stock data. Clearly the AI must improve in order to complete the loop.

The hope is that this mechanism will drive an improvement in stock prediction.

The base AI algorithms which will define the logic of whether to buy, sell, or do nothing, needs to come from a game mechanic. We need a game where the objective is to obtain coins, and to continually increase this value. An example might be pacman. In our case, instead of using w,a,s,d as your choice input, you have: b,s, or n.

A great tutorial on pacman can be found here: http://ai.berkeley.edu/project\_overview.html

The Whitaker’s   
Calendar  
  
Wondering down the winding road,

That is the year that passes.  
Throughout the twists and rolling turns,

Will often lay surprises.

Be quick to seize,

And hold onto these

But hard to spot,

They often  
Be quick to always seize them all,

And forever keep,

your memory full

And so it ends,

Another year,

Another time,

To sing and cheer.

And what a year,

May I say,

Despite the ruckus,  
from the USA.

It’s been a good one,

Yes it has,

Perhaps not perfect,

And here’s to the next one,

As it swiftly roles in,

But perhaps

It’s been a good one,

Yes it has,

So here’s a gift,

That shows the

Well one of sorts,

That captures the memories

And to the next one,

We swiftly head,

It sure comes quick

For dispite the problems,

We seem to hear,

News channel sloguns,

Rather dear,

The Whitaker’s didn’t turn an ear,

They battled on,

To persevere.

Watching

It’s beginning to look a lot like Christmas,

Everywhere you go,

Take a look down the street at ten,

They’ll be vomiting once again,

With ambulance and police car lights aglow

It’s beginning to look a lot like Christmas,

Toys in every store,

But the sorry sight you’ll see,

Are the parents that will be,

Buying their kids call of duty on ps4

It’s beginning to look a lot like Christmas,

Everywhere you go,

There’s a dogging group hotel,

One in the park as well,

For the sturdy kind that don’t seem to mind the snow

Its begining to look a lot like Christmas,

Soon the bells will start,

And the thing that will make them ring,

Look to the street and see,

In almost disbelief

The chaos ensuing and horror that be,

For it’s Christmas, once again!

Whitness the horror that be,

Where there’s ice all on the roads,

And the people turn up in droves,

Yes it’s Christmas, that’s for sure

It’s beginning to look a lot like Christmas,

Everywhere you go,

Although it must be said,

Brighton

Even perhaps abroad, although it’s not assured,

We surely should find out none the less

To My Dearest Hannah

What adventure,

Awaits us next?

He said,

She said,

Rather perplexed.

Who could tell,

It’s anyones guess,

A passers by said,

In rather good jest.

For this is Christmas,

Where everyone gets,

He continued to say,

As he strapped on his jets.

Including me!

He said as he wooshed,

Aloft he did go,

Aloft with a woosh.

They turned in thought,

At what had occurred,

It was after all,

Rather absurd.

But never mind that,

We’ve got adventures to plan!

He said as he bowed,

And raised out his hand.

Within it was,

But a small envelope,

It was crisp,

Well pressed,

Is this a joke?

She said as she took,

The small envelope.

What could it be?

What could it be?

I don’t know,

What could it be,

He replied,

Overjoyed,

And swelling with pride.

What could it be?

What could it be?

I don’t know,

He said once more,

Open it up,

And let’s find out for sure.