Design of a Trading Expert System for Stock Trend Analysis

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[Survey paper]

[Conventional Stock Analysis Techniques]

1. MetaStock

A. Features

  i. Built-in drawing tools like Fibonacci retracement to complement technical indicators

  ii. Integrated news

  iii. Fundamental data with screening and filtering criteria

  iv. Global markets coverage across multiple assets - equities, derivatives, forex, futures and commodities

2. Worden TC2000

A. Features

  i. Stock charts, watch lists, alerts, instant messaging, news, scanning, and sorting

  ii. Fundamental data coverage, more than 70 technical indicators with 10 drawing tools

  iii. An easy-to-use trading interface

  iv. A backtesting function on historical data.

B. Drawbacks

  i. Does not offer automated trading tools

ii.   Asset classes are limited to stocks, funds, and ETFs

3. eSignal

A. Features

i.   Global coverage across multiple asset classes including stocks, funds, bonds, derivatives, and forex

ii.   Good trade management interface with news and fundamental figures coverage

iii.   Stock charts software allowing for a lot of customization

B. Drawbacks

i.   Limited available technical indicators

4. NinjaTrader

A. Features

i.   End-to-end solution from order entry to execution with customized development options and third-party library integration compatible for 300+ add-on products.

ii.   Specialized for futures and forex traders.

iii.   Technical indicators more than 100, fundamentals, charting, and research tools,

iv.   Offering a useful trade simulator and enabling risk-free trade learning for budding traders

5. ProfitSource

A. Features

i.   Offering an edge with complex technical indicators

- Elliot Wave analysis

- Backtesting functionality with more than 40+ automated technical indicators built in

- Its asset class coverage spans across equities, forex, options, futures, and funds at the global level

6. VectorVest

A. Features

i. Software for the intercontinental crowd

ii. Offering comprehensive coverage for common technical indicators across major stocks and funds all around the world

iii. Offering strong backtesting capabilities, customization, real-time filtering, watch lists, and charting tools

[Conventional Stock Analysis Techniques Comparison Table]

1. Capability

	MetaStock	TC2000	eSignal	NinjaTrader	ProfitSource	VectorVest
PC	O	O	O	O	O	O
For MAC		O	O			
Mobile devices		O	O			

2. Supported funds

	MetaStock	TC2000	eSignal	NinjaTrader	ProfitSource	VectorVest
Stocks	O	O	O	O	O	O
ETF	O	O	O	O	O	O
Mutual Funds	O	O	O	O	O	O
Options	O	O	O	O	O	
Futures	O		O	O	O	
Forex	O	O	O	O	O	
Bonds	O		O			

3. Trade management

	MetaStock	TC2000	eSignal	NinjaTrader	ProfitSource	VectorVest
Broker integration stocks	O	O	O	O		
Broker integration options		O	O	O	O	
Place trade from charts		O	O	O	O	
Live position P&L		O	O	O	O	
P&L analysis		O	O	O	O	O
Automated trading				O		

4. Fundamental scanning & screening

	MetaStock	TC2000	eSignal	NinjaTrader	ProfitSource	VectorVest
Real time scanning & filtering	O	O	O	O	O	O
Fundamentals scanning	O	O	O		O	
Watch lists with fundamentals	O	O	O		O	O

5. News

	MetaStock	TC2000	eSignal	NinjaTrader	ProfitSource	VectorVest
News feed	O	O	O	O	O	
Real-time news feed	O		O			O
Market commentary	O	O				
Community chat	O	O				

6. Technical analysis - Chart

	MetaStock	TC2000	eSignal	NinjaTrader	ProfitSource	VectorVest
Multiple charts	O	O	O	O	O	O
Candlestick	O	O	O	O	O	O

	MetaStock	TC2000	eSignal	ProfitSource	VectorVest
Point & features	O				O	
Equivolume	O				O	
Market profile	O				O	

7. Technical analysis - Indicators

	MetaStock	TC2000	eSignal	NinjaTrader	ProfitSource	VectorVest
Bollinger bands	O	O	O	O	O	O
Directional movement	O	O	O	O	O	O
Ichimoku cloud	O				O	
MACD	O	O	O	O	O	O
Momentum	O	O	O	O	O	
Money flow	O	O	O	O	O	
Moving averages	O	O	O	O	O	O
Parabolic SAR	O	O	O	O	O	
Rate of change	O	O	O	O	O	
Relative strength	O	O	O	O	O	O
Stochastics	O	O	O	O	O	O
Volume at price	O	O		O	O	
Custom indicator development	O	O		O	O	

Volume	**O**	**O**	**O**	**O**	**O**	**O**
Darvas box	**O**				**O**	
Elliot wave	**O**				**O**	
# of indicators	**300+**	**70+**	**22**	**104**	**32**	**19**

8. Technical analysis - Drawing tools

	MetaStock	TC2000	eSignal	NinjaTrader	ProfitSource	VectorVest
Fibonacci retracement	**O**	**O**	**O**	**O**	**O**	**O**
Fibonacci time	**O**	**O**	**O**	**O**		
Fibonacci fan	**O**	**O**	**O**	**O**		
Trend lines	**O**	**O**	**O**	**O**	**O**	**O**
Text overlay	**O**	**O**	**O**	**O**	**O**	**O**
Andrews pitchfork	**O**	**O**	**O**	**O**		
Error channel	**O**	**O**				
Gann grid/line	**O**		**O**	**O**		
Quadrant lines	**O**	**O**				
Speed lines	**O**	**O**				

	MetaStock	TC2000	eSignal	NinjaTrader	ProfitSource	VectorVest
Tirone levels	O	O	O	O		O
Automated alerts	O	O	O	O	O	O

8. Stock systems & back testing

	MetaStock	TC2000	eSignal	NinjaTrader	ProfitSource	VectorVest
System marketplace	O	O	O	O		
Create customizable systems	O	O	O	O	O	O
Backtesting point & click		O			O	O
Backtesting programmatic	O	O	O	O	O	O
New forecasting	O					
New sector maps						

[Design of Stock Analysis System]

1. **Objective: Real-time Mobile Stock Trend Analysis Application**

2. **Features**

   A. Available in mobile devices such as Android & iOS

   B. Real-time stock charts, news, sorting, alerts, etc.

   C. Fundamental data coverage with various technical indicators and drawing tools

D. Icon-based interface: easy to use

E. Customized stork charts

3. **Software & libraries**

   A. JAVA program for mobile application: **Eclipse, Android Studio, RAD Studio**, etc.

   B. **Ta4j**

      i. An open source Java library for technical analysis

      ii. GitHub link: https://github.com/mdeverdelhan/ta4j-origins

      iii. Features

         ● 100% Pure Java - works on any Java Platform version 8 or later

         ● More than 100 technical indicators

         ● A powerful engine for building custom trading strategies

         ● Utilities to run and compare strategies

         ● Minimal 3rd party dependencies

         ● Simple integration

   C. ActiveQuant

      i. A framework or an API for automated trading, opportunity detection, financial engineering, research in finance, connecting to brokers, etc.

      ii. Link: https://github.com/activequant

D. AIOTrade

    i.   An open source stock technical analysis platform built on pure java

    ii.   Link: http://sourceforge.net/projects/humaitrader

E. Auge

    i.   An easy-to-use financial portfolio management application

    ii.   Link: http://sourceforge.net/projects/auge

4. Services

A. Stock charts with Candlestick & trend lines

B. Automated trading

C. News feeding

D. Automated alerts

5. Main Indicators

A. Directional movement

B. MACD

C. Momentum

D. Moving averages

E. Volume

F. Stochastics