New World Technologies

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Neural Network
Stock Price Prediction Algorithm
Results

Example Case #6

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Summary

The concept behind this technology is that company stock price profiles contain patterns that are indicative of future movements and directions. Ted Warren published a book in the 1960s about how to recognize and invest (and profit) based on certain easily recognizable geometric patterns (this approach falls under the heading of Technical Analysis). A type of artificial intelligence, called Artificial Neural Networks, takes this concept a quantum leap forward because it can recognize complex patterns that are not discernible to the human eye. Fundamentally the Neural Network is analyzing the history of the stock and then predicting where the price will end up over the next year (up or down).

Thus a Neural Network is "trained" to recognize patterns in company price and volume (and other data) profiles, and then to predict the high-end or low-end price of each stock over the next year. In this case Neural Networks were trained with inputs spanning a period of 1,200 trading days and outputs of the high/low price points over the next 300 trading days. Refer to pages 5, 6, & 7 for more details.

The performance of each Neural Network is forecast-tested by having it analyze the stock profiles of other companies which were not in its training data set (companies that it had never "seen" before). The Neural Network stock selection set needs to be able to beat the market average Return on Investment (ROI) – that is the net increase/decrease of all of the forecast test stocks over the investment period - in order for it to be considered "successful".

Of a pool of 198 companies, 99 are used for training of the Neural Networks and the remaining 99 are used for forecast testing of these same Neural Networks. Prior to training and forecast testing, the training/test time window intervals of the companies and their data are shuffled in random order by the software such that they fall somewhere in a 10 year time span between 2005 and 2015.

Summary

These time intervals (set by the software) span 1,200 trading days and are for training input to the Neural Network. The 300 trading days following each of these 1,200 trading day intervals are used for the training output to the Neural Network. Again - these time intervals are randomly selected by the software and can lie anywhere in the 10 year time span interval between 2005 and 2015.

When performing forecast testing, a rule set is implemented which makes the buy/sell decision based on the value of the Neural Network output signal-strength for a particular stock. If the Neural Network predicted price point exceeds the rule set specified percentage of the purchase price, the stock is purchased. The stock is then held until the end of the investment time period (300 trading days) and sold.

The high-achieving Neural Networks (called Super Nets) were able to achieve remarkable ROIs as shown on pages 15 through 28.

Example Case #6 Training Set

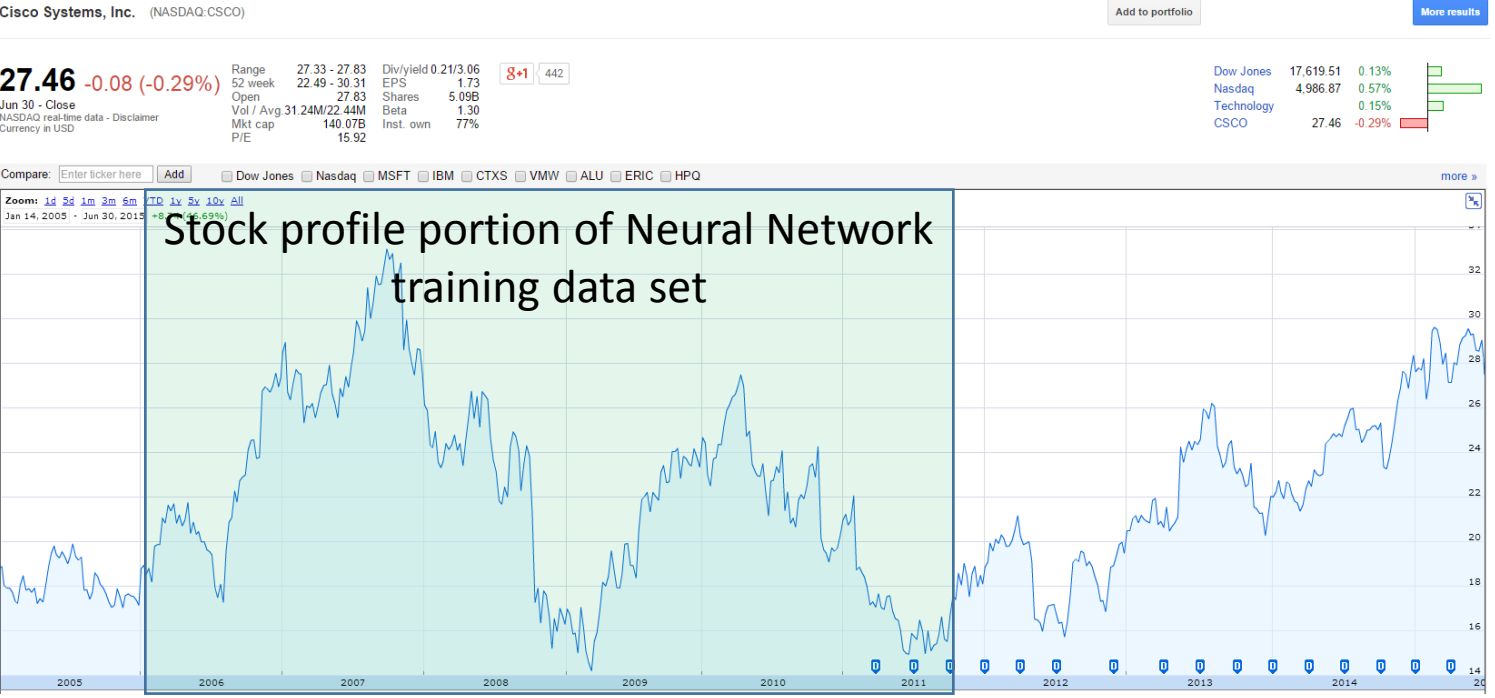
In this example case, a pool of 198 companies was used for training and forecast testing purposes - the same ones used in Example Case #5, however, the company sets were shuffled. The criteria was that there had to be at least 10 years worth of available financial data. Capitalization and market sector were not considerations in the selection criteria – on the contrary, the selected companies covered a broad range of capitalizations and market sectors from the NYSE and NASDAQ exchanges.

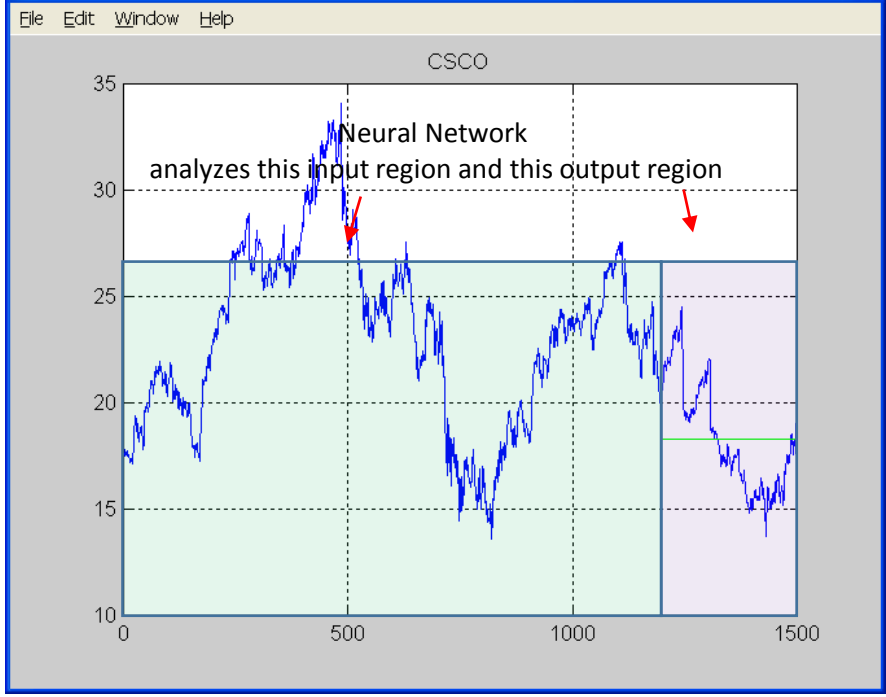
The training and forecast test sets were generated from time windows of 1,500 days for which the start date was randomly selected by the software, inside a 10 year time interval – early 2005 to early 2015.

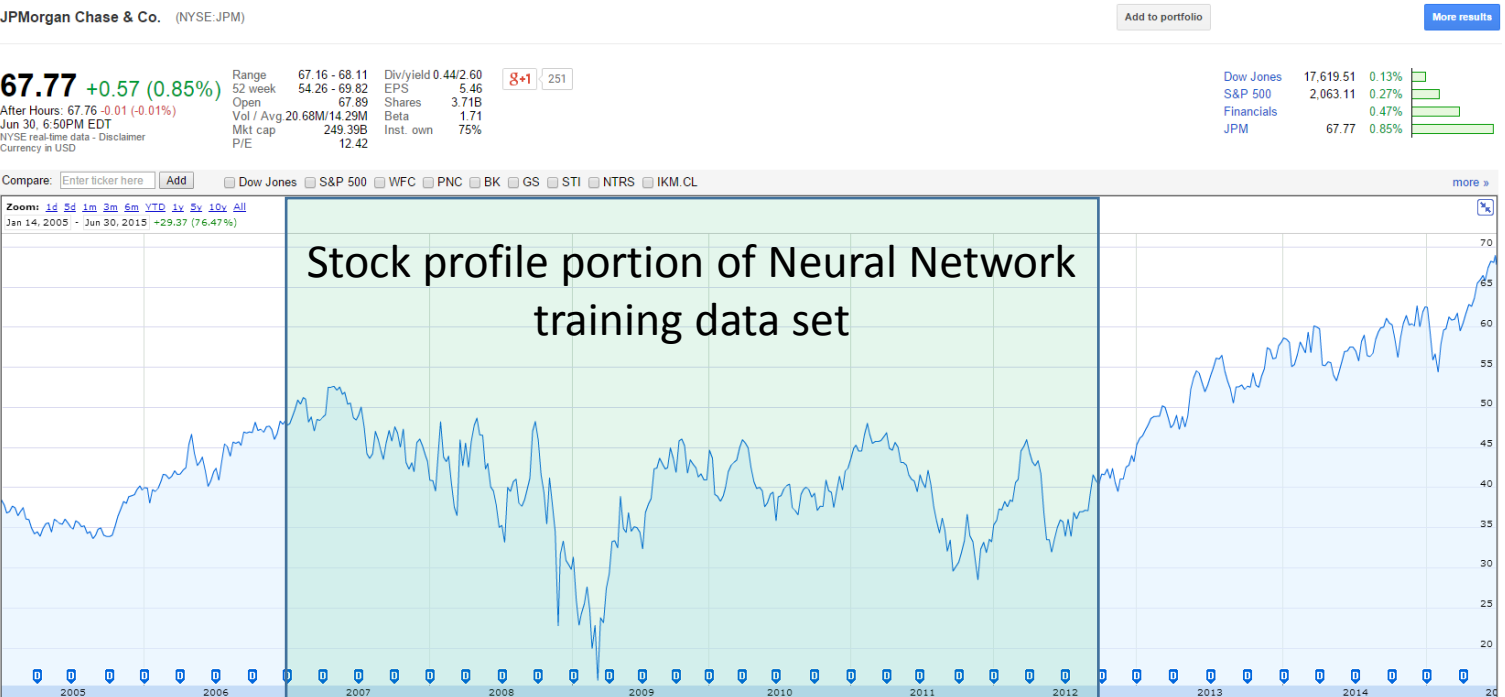
The following 99 companies were used for training,

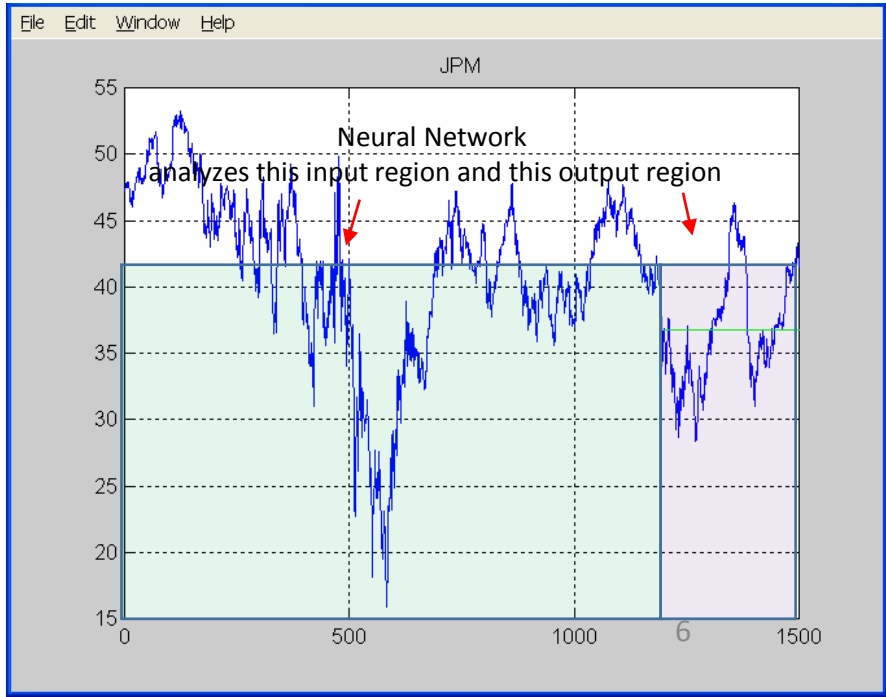
BCO,	CLX,	VICR,	AGU,	BGG,	CB,	EZPW,
BGCP,	CASY,	UGI,	VLO,	SJR,	EQT,	ATRO,
TXN,	KMB,	SUBK,	CSCO,	CMCSA,	OLED,	CTL,
AMIC,	REV,	DIS,	RBCAA,	PKI,	ADBE,	CGNX,
NUE,	BF-A,	HPQ,	CAH,	MTZ,	JWN,	LLTC,
MMM,	PCG,	SENEB,	SCI,	ABM,	TSO,	CAT,
VMC,	BDC,	LLY,	AEP,	UEIC,	RJET,	PAYX,
KO,	TSS,	MATW,	HCP,	CTSH,	CELG,	ALTR,
ANGO,	SJW,	PSMT,	AET,	RDWR,	JKHY,	ODP,
A,	ED,	CLCT,	JPM,	CAMP,	SHLM,	HOG,
LRCX,	MLM,	HMC,	PFE,	CSX,	CSU,	MMC,
DE,	BAX,	BKE,	MCD,	SAN,	ITW,	SSL,
CAJ,	TSN,	BA,	CTAS,	ARG,	COP,	PPL,
CRUS,	EXC,	HSY,	QCOM,	ATU,	RENT,	JBHT,
WBS,						

Two examples of the training intervals are shown on the next page.


Cisco Systems, Inc. (NASDAQ:CSCO)
Add to portfolio
More results
27.46 -0.08 (-0.29%)
Jun 30 - Close
NASDAQ real-time data - Disclaimer
Currency in USD
Range 27.33 - 27.83
52 week 22.49 - 30.31
Open 27.83
Vol / Avg. 31.24M/22.44M
Mkt cap 140.07B
P/E 15.92
Div/yield 0.21/3.06
EPS 1.73
Shares 5.09B
Beta 1.30
Inst. own 77%
Dow Jones 17,619.51 0.13%
Nasdaq 4,986.87 0.57%
Technology 0.15%
CSCO 27.46 -0.29%
Compare: Enter ticker here Add Dow Jones Nasdaq MSFT IBM CTXS VMW ALU ERIC HPQ more »
Zoom: 1d 5d 1m 3m 6m YTD 1y 5y 10y All
Jan 14, 2005 - Jun 30, 2015
Stock profile portion of Neural Network training data set


File Edit Window Help
CSCO
Neural Network
analyzes this input region and this output region


JPMorgan Chase & Co. (NYSE:JPM)
Add to portfolio
More results
67.77 +0.57 (0.85%)
After Hours: 67.76 -0.01 (-0.01%)
Jun 30, 6:50PM EDT
NYSE real-time data - Disclaimer
Currency in USD
Range 67.16 - 68.11
52 week 54.26 - 69.82
Open 67.89
Vol / Avg. 20.68M/14.29M
Mkt cap 249.39B
P/E 12.42
Div/yield 0.44/2.60
EPS 5.46
Shares 3.71B
Beta 1.71
Inst. own 75%
Dow Jones 17,619.51 0.13%
S&P 500 2,063.11 0.27%
Financials 0.47%
JPM 67.77 0.85%
Compare: Enter ticker here Add Dow Jones S&P 500 WFC PNC BK GS STI NTRS IKM.CL more »
Zoom: 1d 5d 1m 3m 6m YTD 1y 5y 10y All
Jan 14, 2005 - Jun 30, 2015 +29.37 (76.47%)
Stock profile portion of Neural Network training data set


File Edit Window Help
JPM
Neural Network
analyzes this input region and this output region

Example Case #6 Forecast Test Set

The following 99 companies were used for forecast testing.

WY,	GSK,	GCO,	BCS,	VZ,	GE,	SNE,
DOW,	BEAV,	ICON,	BBY,	BEN,	CHKP,	SPLS,
COH,	DAVE,	SYMC,	FINL,	KELYA,	F,	HD,
NWN,	EFX,	HAL,	BBOX,	MENT,	PGR,	YHOO,
BCE,	GT,	STT,	NKE,	TGT,	ENL,	ONB,
PNK,	WMT,	AVP,	OXY,	ANIK,	CPB,	AXTI,
WDC,	MDT,	KR,	AFL,	ETN,	ACET,	GRMN,
ZION,	PG,	ADSK,	PEP,	BAC,	CVGI,	GLW,
DGX,	GIS,	MLHR,	EMC,	JCI,	BMY,	HON,
ORCL,	TAYD,	AIRM,	HAS,	ADTN,	BIG,	AIR,
ADM,	ERIC,	RSTI,	XOM,	LAMR,	DRI,	SYKE,
BBBY,	NTT,	HCKT,	GGG,	UDR,	IRM,	HRL,
BKMU,	ABT,	PTC,	MSFT,	ENB,	AMAG,	IDTI,
TROW,	SYBT,	TR,	ACIW,	NSC,	EA,	WWW,
CAG,						

Data Set Shuffling

While the same data set of 198 companies that was used for Example Case #5 was used for this Example Case #6, the company data sets were shuffled such that some of the companies in the Example Case #5 training set now appeared in the Example Case #6 forecast test set, and some companies in the Example Case #5 forecast test set now appeared in the Example Case #6 training set.

More specific details can be seen on the next page.

Data Set Shuffling

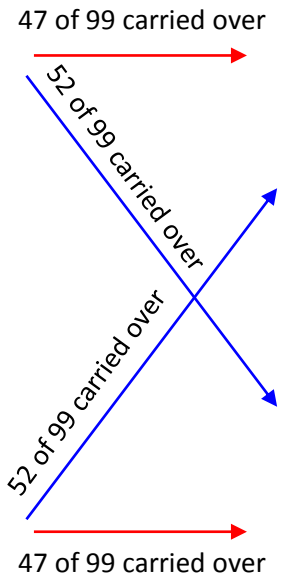
Note that just over 50% of the training companies in Example Set #5 were used as forecast test companies in Example Set #6. The software generated the scrambling of companies for the new forecast test set.

Example Set #5 Training Companies

JBHT, MLHR, ANGO, HPQ, MATW, MLM, BKMU,
AFL, DRI, EA, AEP, PAYX, KELYA, CAG,
MMM, AIR, BEN, GSK, CAT, PCG, SHLM,
HD, MENT, JKHY, ACIW, ED, AGU, RBCAA,
RJET, ADM, PNK, CVGI, OXY, MTZ, HRL,
WWW, BF-A, WDC, LLTC, BAX, HSY, HMC,
SJW, ATU, AMIC, GRMN, CSU, SYBT, TROW,
BBY, PPL, BBOX, ONB, AXTI, CSCO, EMC,
LLY, GCO, GLW, EFX, F, EQT, GIS,
CAJ, CTAS, VZ, ZION, VLO, BKE, GT,
PKI, TGT, JPM, WY, CGNX, ETN, AIRM,
SENEB, BCO, BCS, ORCL, OLED, TR, ALTR,
LAMR, IRM, FINL, TAYD, DGX, COP, TSO,
PTC, TSS, LRCX, ABT, GE, DIS, HCKT,
ATRO,

Example Set #5 Forecast Test Companies

NWN, COH, CAH, CB, EZPW, CMCSA, MDT,
BIG, MSFT, ANIK, CSX, SYKE, BBBY, CLX,
CLCT, CAMP, ODP, KMB, DAVE, AVP, UDR,
DOW, SUBK, ENL, TXN, PFE, WBS, IDTI,
SJR, CPB, VMC, DE, SPLS, CASY, REV,
UGI, WMT, BCE, NUE, SSL, PGR, QCOM,
PSMT, KR, EXC, BDC, ADSK, A, CHKP,
PEP, KO, HON, STT, ITW, CTL, BEAV,
SAN, RDWR, ERIC, HCP, CTSH, NKE, BMY,
ICON, UEIC, SCI, XOM, PG, RENT, BAC,
JWN, AET, HAL, NSC, SYMC, ABM, ADTN,
VICR, RSTI, ARG, AMAG, MCD, ENB, JCI,
CRUS, NTT, BGCP, MMC, SNE, ADBE, GGG,
YHOO, HOG, CELG, TSN, BGG, HAS, ACET,
BA,



Example Set #6 Training Companies

BCO, CLX, VICR, AGU, BGG, CB, EZPW,
BGCP, CASY, UGI, VLO, SJR, EQT, ATRO,
TXN, KMB, SUBK, CSCO, CMCSA, OLED, CTL,
AMIC, REV, DIS, RBCAA, PKI, ADBE, CGNX,
NUE, BF-A, HPQ, CAH, MTZ, JWN, LLTC,
MMM, PCG, SENEB, SCI, ABM, TSO, CAT,
VMC, BDC, LLY, AEP, UEIC, RJET, PAYX,
KO, TSS, MATW, HCP, CTSH, CELG, ALTR,
ANGO, SJW, PSMT, AET, RDWR, JKHY, ODP,
A, ED, CLCT, JPM, CAMP, SHLM, HOG,
LRCX, MLM, HMC, PFE, CSX, CSU, MMC,
DE, BAX, BKE, MCD, SAN, ITW, SSL,
CAJ, TSN, BA, CTAS, ARG, COP, PPL,
CRUS, EXC, HSY, QCOM, ATU, RENT, JBHT,
WBS,

Example Set #6 Forecast Test Companies

WY, GSK, GCO, BCS, VZ, GE, SNE,
DOW, BEAV, ICON, BBY, BEN, CHKP, SPLS,
COH, DAVE, SYMC, FINL, KELYA, F, HD,
NWN, EFX, HAL, BBOX, MENT, PGR, YHOO,
BCE, GT, STT, NKE, TGT, ENL, ONB,
PNK, WMT, AVP, OXY, ANIK, CPB, AXTI,
WDC, MDT, KR, AFL, ETN, ACET, GRMN,
ZION, PG, ADSK, PEP, BAC, CVGI, GLW,
DGX, GIS, MLHR, EMC, JCI, BMY, HON,
ORCL, TAYD, AIRM, HAS, ADTN, BIG, AIR,
ADM, ERIC, RSTI, XOM, LAMR, DRI, SYKE,
BBBY, NTT, HCKT, GGG, UDR, IRM, HRL,
BKMU, ABT, PTC, MSFT, ENB, AMAG, IDTI,
TROW, SYBT, TR, ACIW, NSC, EA, WWW,
CAG,

Performance Benchmark

The software “invests” (simulated, of course) an equal amount of money in each of the 99 forecast test companies and only sells the stock at the end of the investment period (300 trading days in this case). This produces a “market average” – in this case the market average for these stocks was 24.4% (see page 12).

Thus the Neural Network predictors have to be able to beat this number in order to be considered “successful”.

Market investment in all of the test stock

Company	Initial Investment($)	Purchase Price($)	Sell Price($)	Sell Value($)	ROI (percent)	Portfolio Value($)
WY	100.0	16.6	30.6	184.1	84.1	184.1
GSK	100.0	39.1	44.9	114.7	14.7	298.8
GCO	100.0	21.3	41.6	195.2	95.2	494.0
BCS	100.0	13.5	18.5	136.7	36.7	630.7
VZ	100.0	48.7	48.7	100.0	0.0	730.8
GE	100.0	19.8	18.5	93.7	-6.3	824.5
SNE	100.0	29.1	19.8	68.1	-31.9	892.6
DOW	100.0	40.1	44.2	110.1	10.1	1002.8
BEAV	100.0	33.1	45.4	137.1	37.1	1139.8
ICON	100.0	18.6	25.5	137.5	37.5	1277.4
BBY	100.0	24.3	17.4	71.6	-28.4	1349.0
BEN	100.0	41.3	32.5	78.8	-21.2	1427.8
CHKP	100.0	31.4	49.6	158.0	58.0	1585.8
SPLS	100.0	24.3	15.3	63.0	-37.0	1648.8
COH	100.0	57.4	56.4	98.2	-1.8	1746.9
DAVE	100.0	8.4	8.7	103.3	3.3	1850.3
SYMC	100.0	15.8	15.8	100.0	0.0	1950.3
FINL	100.0	21.0	18.2	86.6	-13.4	2036.9
KELYA	100.0	11.6	14.5	124.9	24.9	2161.8
F	100.0	16.7	12.7	76.3	-23.7	2238.2
HD	100.0	59.7	78.5	131.5	31.5	2369.7
NWN	100.0	46.5	45.2	97.2	-2.8	2466.9
EFX	100.0	32.1	39.1	122.0	22.0	2588.8
HAL	100.0	31.7	48.4	152.6	52.6	2741.5
BBOX	100.0	32.9	27.6	83.9	-16.1	2825.4
MENT	100.0	8.7	14.4	165.6	65.6	2991.0
PGR	100.0	26.0	24.8	95.4	-4.6	3086.4
YHOO	100.0	14.6	18.6	127.6	27.6	3214.0
BCE	100.0	39.5	42.7	108.1	8.1	3322.1
GT	100.0	13.9	12.5	90.1	-9.9	3412.2
STT	100.0	40.3	57.5	142.8	42.8	3555.0
NKE	100.0	63.3	89.1	140.8	40.8	3695.8
TGT	100.0	51.2	49.5	96.8	-3.2	3792.6
ENL	100.0	33.1	44.7	134.9	34.9	3927.5

Continued on next page …

Performance Benchmark

ONB	100.0	11.8	11.4	96.9	-3.1	4024.4
PNK	100.0	13.6	24.3	178.2	78.2	4202.5
WMT	100.0	53.6	58.3	108.9	8.9	4311.4
AVP	100.0	15.7	19.9	126.9	26.9	4438.3
OXY	100.0	85.9	76.5	89.1	-10.9	4527.4
ANIK	100.0	10.9	37.7	347.4	247.4	4874.8
CPB	100.0	45.1	43.5	96.4	-3.6	4971.2
AXTI	100.0	2.7	7.4	276.9	176.9	5248.1
WDC	100.0	34.9	42.3	121.3	21.3	5369.3
MDT	100.0	46.8	63.6	135.8	35.8	5505.2
KR	100.0	29.1	46.4	159.3	59.3	5664.4
AFL	100.0	49.8	65.2	130.9	30.9	5795.4
ETN	100.0	30.8	54.4	176.2	76.2	5971.6
ACET	100.0	10.3	17.5	170.5	70.5	6142.1
GRMN	100.0	37.9	55.2	145.8	45.8	6287.8
ZION	100.0	18.0	22.6	126.0	26.0	6413.8
PG	100.0	61.6	64.1	104.0	4.0	6517.8
ADSK	100.0	36.5	30.9	84.8	-15.2	6602.6
PEP	100.0	68.8	79.4	115.5	15.5	6718.0
BAC	100.0	7.9	14.1	178.6	78.6	6896.6
CVGI	100.0	18.0	12.3	68.5	-31.5	6965.2
GLW	100.0	12.6	19.1	151.3	51.3	7116.5
DGX	100.0	57.1	58.5	102.5	2.5	7219.0
GIS	100.0	38.2	49.4	129.3	29.3	7348.3
MLHR	100.0	25.7	18.5	71.9	-28.1	7420.2
EMC	100.0	27.0	23.3	86.2	-13.8	7506.3
JCI	100.0	39.6	28.3	71.4	-28.6	7577.8
BMY	100.0	23.3	25.8	110.7	10.7	7688.4
HON	100.0	89.7	104.4	116.3	16.3	7804.8
ORCL	100.0	21.8	26.0	119.1	19.1	7923.9
TAYD	100.0	8.4	10.5	124.9	24.9	8048.7
AIRM	100.0	9.3	21.7	234.8	134.8	8283.5
HAS	100.0	32.4	46.9	144.7	44.7	8428.2
ADTN	100.0	35.3	35.3	99.8	-0.2	8528.0
BIG	100.0	38.0	37.0	97.2	-2.8	8625.2
AIR	100.0	18.4	25.6	139.5	39.5	8764.7
ADM	100.0	28.5	28.7	100.5	0.5	8865.2
ERIC	100.0	10.0	12.9	129.2	29.2	8994.4

Continued on next page …

Performance Benchmark

RSTI	100.0	26.5	22.5	85.0	-15.0	9079.5
XOM	100.0	81.4	89.9	110.5	10.5	9190.0
LAMR	100.0	24.7	44.2	178.9	78.9	9368.9
DRI	100.0	48.0	50.6	105.4	5.4	9474.3
SYKE	100.0	15.6	14.8	94.7	-5.3	9569.0
BBBY	100.0	63.1	77.2	122.4	22.4	9691.4
NTT	100.0	23.3	24.9	106.5	6.5	9797.9
HCKT	100.0	4.9	4.1	83.4	-16.6	9881.3
GGG	100.0	30.0	41.2	137.4	37.4	10018.7
UDR	100.0	23.7	33.4	140.7	40.7	10159.4
IRM	100.0	29.6	26.8	90.4	-9.6	10249.8
HRL	100.0	22.1	28.3	127.8	27.8	10377.6
BKMU	100.0	6.3	6.7	105.5	5.5	10483.1
ABT	100.0	27.1	23.5	86.9	-13.1	10570.1
PTC	100.0	21.6	27.6	128.3	28.3	10698.3
MSFT	100.0	30.7	35.5	115.6	15.6	10813.9
ENB	100.0	37.5	43.4	115.6	15.6	10929.5
AMAG	100.0	24.3	44.8	184.7	84.7	11114.2
IDTI	100.0	8.5	16.0	189.0	89.0	11303.3
TROW	100.0	64.7	64.5	99.6	-0.4	11402.9
SYBT	100.0	24.2	23.0	94.8	-5.2	11497.7
TR	100.0	30.0	29.1	97.0	-3.0	11594.8
ACIW	100.0	6.1	9.0	146.9	46.9	11741.6
NSC	100.0	78.2	104.1	133.0	33.0	11874.7
EA	100.0	12.7	26.6	210.4	110.4	12085.1
WWW	100.0	21.2	25.7	121.2	21.2	12206.3
CAG	100.0	33.3	37.8	113.7	13.7	12320.0

Initial Market Investment = $9900.0

Final Market Portfolio Value = $12320.0

Total Return on Market Investment = 24.4 percent

Performance Results

The total market average return for this group of forecast test stocks was 24.4%

When performing forecast testing, a threshold can be set in the software such that only stocks, for which the Neural Network predicts a certain Return on Investment (ROI), will be purchased. For example, if the threshold is set at 50%, then only stocks that the Neural Network predicts will have an ROI of 50% or higher will be purchased.

Monte Carlo testing was performed by generating 100 Neural Networks (for each Monte Carlo test), each of which was trained over a 1,300 trading day period. The threshold setting was 70%.

The average performances for each of the Monte Carlo runs (100 neural networks generated and each made predictions for each of the 99 forecast test stocks) are shown below:

1. 28.5% @ a threshold of 70%
2. 29.2% @ a threshold of 70%
3. 30.7% @ a threshold of 70%
4. 28.8% @ a threshold of 70%
5. 28.9% @ a threshold of 70%

Performance Results – Super Nets

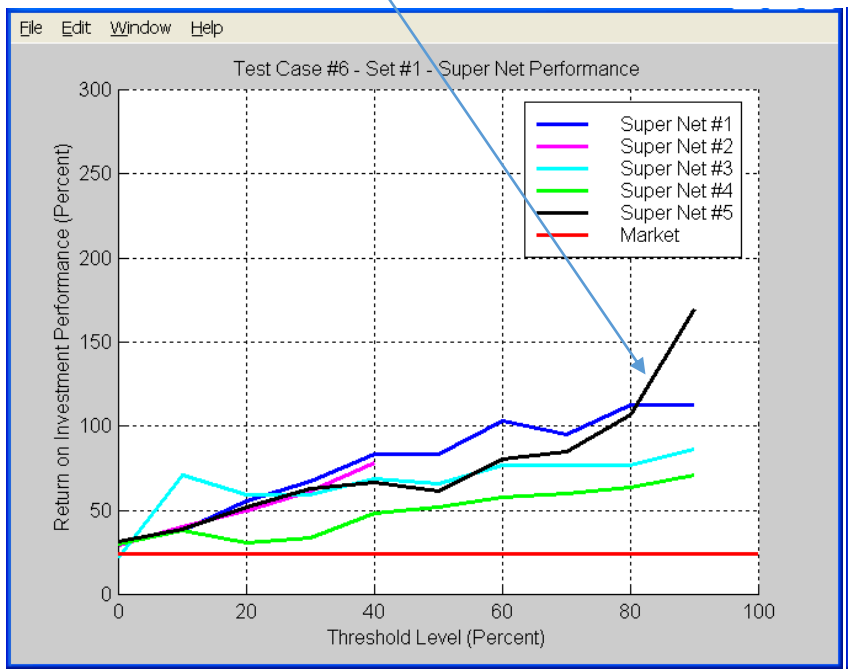
When performing forecast testing, a threshold can be set in the software such that only stocks, for which the Neural Network predicts a certain percentage ROI, will be purchased. For example, if the threshold is set at 50%, then only stocks for which the Neural Network predicts will have an ROI of 50% or higher will be purchased.

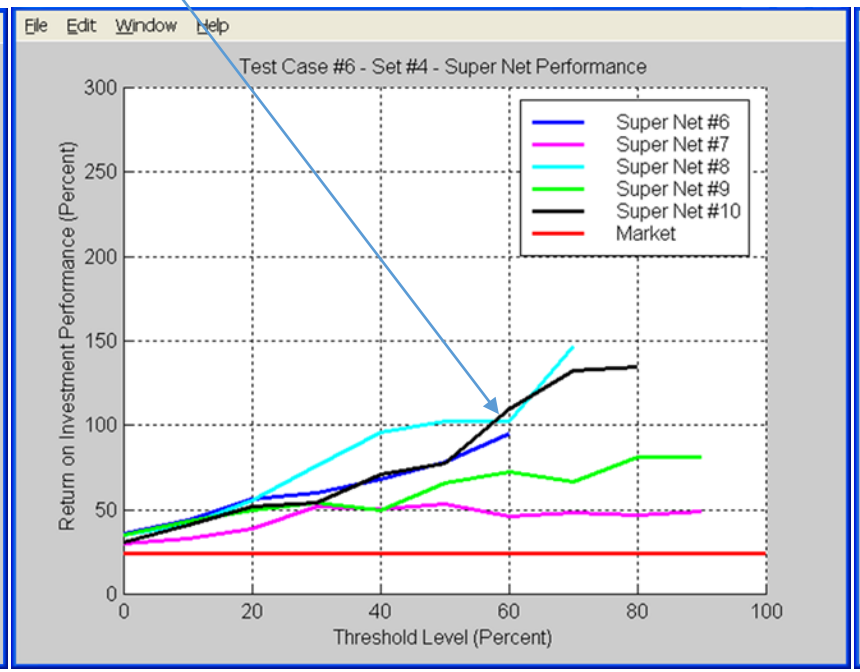
Several sets of high-achieving Neural Networks, called “Super Nets”, were generated to demonstrate their superior performance in picking stocks at the various threshold levels. The rest of the document discusses the performances for three Super Nets.

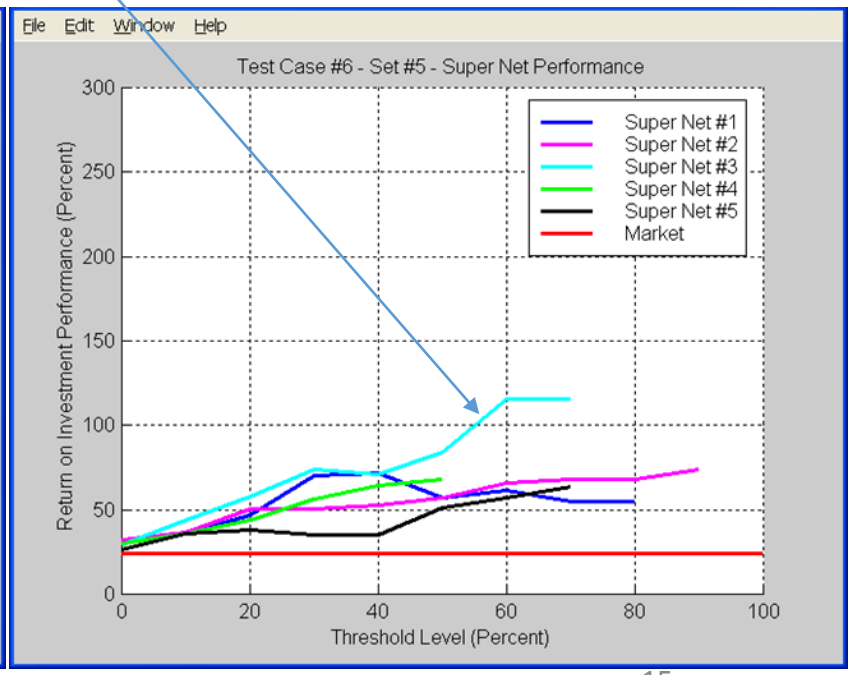
Performance Results – Super Nets

The plots on this page show Super Net ROI performance for threshold levels varying from 0% to 100%. The market ROI (aggregate return of all forecast-tested companies) of 24.4% is shown in red for comparison purposes.

Super Net 1 (Set 1, below left), Super Net 10 (Set 4, below middle), and Super Net 3 (Set 5, below right) were selected to demonstrate performance on subsequent pages.







Performance Results – Super Nets

A comparison of the three Super Net stock picks, at the 50% threshold level, is shown below. Notice that there is overlap between the three Super Nets and that each of the Super Nets also picked several more winners on their own as well. These Super Nets can be combined as a “Wolf Pack” to hunt together for stocks that are going to rise significantly in the next year.

Threshold = 50% for all Super Nets

Super Net #1 Stock Picks	ROI	Super Net #10 Stock Picks	ROI	Super Net #3 Stock Picks	ROI
GCO	95.2%	GCO	95.2%	WY	84.1%
KELYA	24.9%	HD	31.5%	YHOO	27.6%
ANIK	247.4%	ANIK	247.4%	ANIK	247.4%
AXTI	176.9%	MENT	65.6%	GLW	51.3%
WDC	21.3%	WDC	21.3%	AIR	39.5%
ZION	26.0%	ZION	26.0%	ZION	26.0%
TAYD	24.9%	GLW	51.3%	AMAG	84.7%
AIRM	134.8%	AIRM	134.8%		
HAS	44.7%	HRL	27.8%		
LAMR	78.9%				
ENB	15.6%				
EA	110.4%			EA	110.4%
TOTAL ROI	83.4%	TOTAL ROI	77.9%	TOTAL ROI	89.3%

Stock picks that were common to two or more Super Nets and were winners

Stock picks that were not "in common" but were still winners

Stock picks that were not "in common" and were losers (ROI less than or equal to the market)

Stock picks that were common to two or more Super Nets and were losers (ROI less than or equal to the market)

Super Net #1 Performance

The performance of Super Net #1 (Set 1) is demonstrated on the following page for threshold levels 70%, 50%, and 30%. Note that the advantage of using the lower threshold levels is that an investor can maintain a larger diversified portfolio of stocks while still achieving superior ROIs.

On the next page, performance at the 70% threshold level is shown on the top left section. The performance at the 50% threshold level is shown in the middle. The performance at the 30% threshold level is shown on the lower right section.

A green bar represents a winning stock pick that was added to the portfolio as the threshold was dropped. A red bar represents a losing stock pick that was added to the portfolio. Note that “losing stock pick” refers to any stock that performs at the same level of the market ROI (24.4% in this case) or below.

Super Net #1 Performance

Neural Network Rule Set Threshold = 70.0 percent

Company	Initial Investment($)	Purchase Price($)	Sell Price($)	Sell Value($)	ROI (percent)
GCO	100.0	21.3	41.6	195.2	95.2
AXTI	100.0	2.7	7.4	276.9	176.9
ZION	100.0	18.0	22.6	126.0	26.0
AIRM	100.0	9.3	21.7	234.8	134.8
HAS	100.0	32.4	46.9	144.7	44.7
LAMR	100.0	24.7	44.2	178.9	78.9
EA	100.0	12.7	26.6	210.4	110.4

Initial NNet Investment = $700.0

Final NNet Portfolio Value = $1366.8

Total Return on NNet Investment = 95.3 percent

The threshold is lowered to 50% and the Super Net picks 5 more companies – one is a big winner, two are minor winners, and two are big losers.

Neural Network Rule Set Threshold = 50.0 percent

Company	Initial Investment($)	Purchase Price($)	Sell Price($)	Sell Value($)	ROI (percent)
GCO	100.0	21.3	41.6	195.2	95.2
KELYA	100.0	11.6	14.5	124.9	24.9
ANIK	100.0	10.9	37.7	347.4	247.4
AXTI	100.0	2.7	7.4	276.9	176.9
WDC	100.0	34.9	42.3	121.3	21.3
ZION	100.0	18.0	22.6	126.0	26.0
TAYD	100.0	8.4	10.5	124.9	24.9
AIRM	100.0	9.3	21.7	234.8	134.8
HAS	100.0	32.4	46.9	144.7	44.7
LAMR	100.0	24.7	44.2	178.9	78.9
ENB	100.0	37.5	43.4	115.6	15.6
EA	100.0	12.7	26.6	210.4	110.4

Initial NNet Investment = $1200.0

Final NNet Portfolio Value = $2200.8

Total Return on NNet Investment = 83.4 percent

The threshold is lowered to 30% and the Super Net picks 7 more companies – four are big winners, one is a minor winner, and two are big losers.

Neural Network Rule Set Threshold = 30.0 percent

Company	Initial Investment($)	Purchase Price($)	Sell Price($)	Sell Value($)	ROI (percent)
WY	100.0	16.6	30.6	184.1	84.1
GCO	100.0	21.3	41.6	195.2	95.2
KELYA	100.0	11.6	14.5	124.9	24.9
HAL	100.0	31.7	48.4	152.6	52.6
YHOO	100.0	14.6	18.6	127.6	27.6
TGT	100.0	51.2	49.5	96.8	-3.2
ANIK	100.0	10.9	37.7	347.4	247.4
AXTI	100.0	2.7	7.4	276.9	176.9
WDC	100.0	34.9	42.3	121.3	21.3
ZION	100.0	18.0	22.6	126.0	26.0
GLW	100.0	12.6	19.1	151.3	51.3
TAYD	100.0	8.4	10.5	124.9	24.9
AIRM	100.0	9.3	21.7	234.8	134.8
HAS	100.0	32.4	46.9	144.7	44.7
RSTI	100.0	26.5	22.5	85.0	-15.0
LAMR	100.0	24.7	44.2	178.9	78.9
ENB	100.0	37.5	43.4	115.6	15.6
AMAG	100.0	24.3	44.8	184.7	84.7
EA	100.0	12.7	26.6	210.4	110.4

Initial NNet Investment = $1900.0

Final NNet Portfolio Value = $3183.1

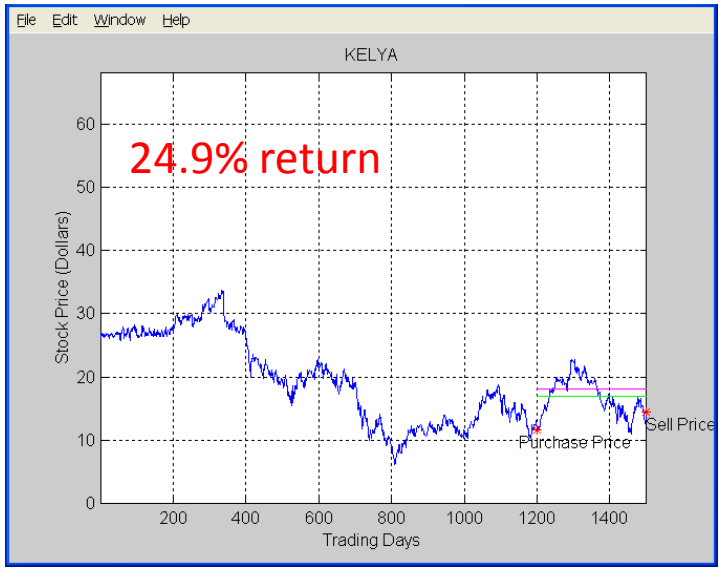
Total Return on NNet Investment = 67.5 percent

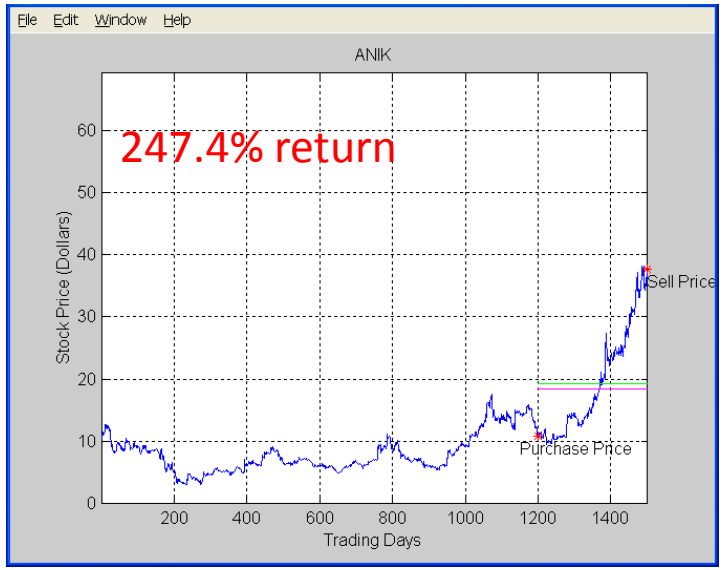
= winning stock pick that was added to the portfolio as the threshold was dropped.

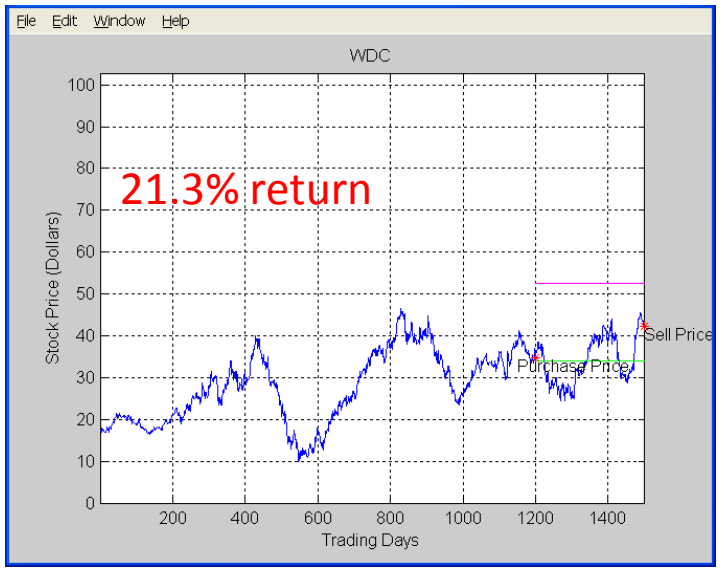
= a losing stock pick (anything less than the Market ROI of 24.4 %) that was added to the portfolio as the threshold was dropped.

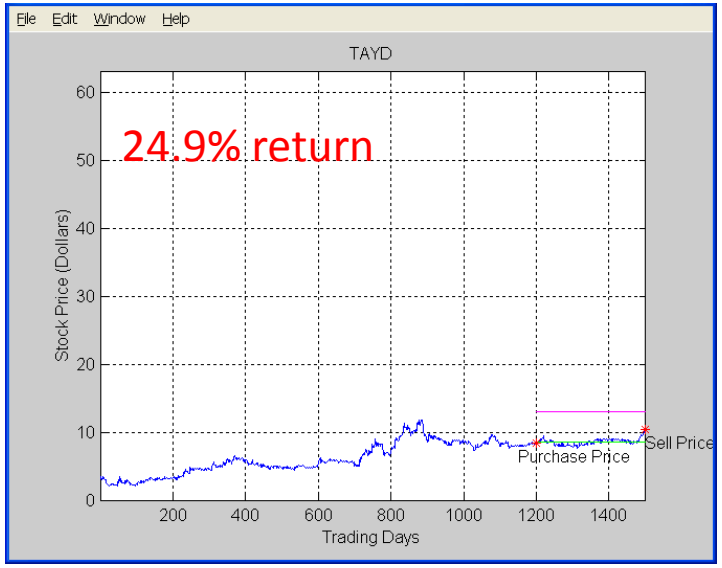
Super Net #1 Performance

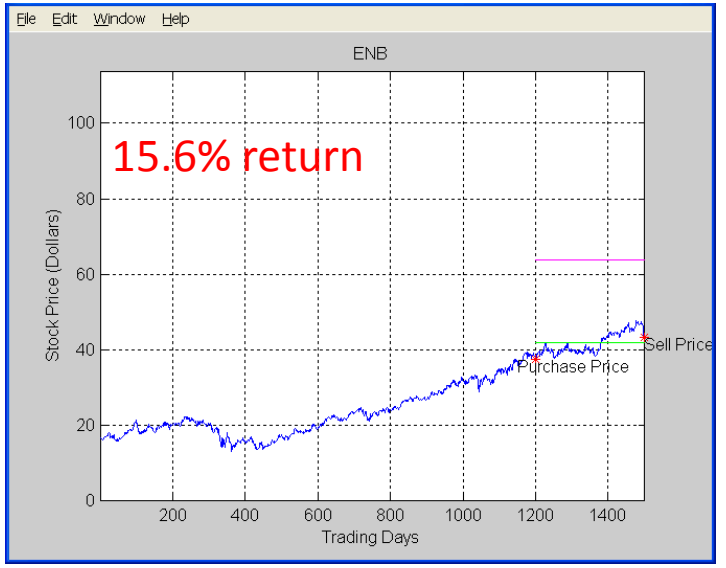
The following plots are of the five companies that were added to the mix for the 50% threshold level.











Super Net #10 Performance

The performance of Super Net #10 (Set 4) is demonstrated on the following page for threshold levels 70%, 50%, and 30%. Note that the advantage of using the lower threshold levels is that an investor can maintain a larger diversified portfolio of stocks while still achieving superior ROIs.

On the next page, performance at the 70% threshold level is shown on the top left section. The performance at the 50% threshold level is shown in the middle. The performance at the 30% threshold level is shown on the lower right section.

A green bar represents a winning stock pick that was added to the portfolio as the threshold was dropped. A red bar represents a losing stock pick that was added to the portfolio. Note that “losing stock pick” refers to any stock that performs at the same level of the market ROI (24.4% in this case) or below.

Super Net #10 Performance

Neural Network Rule Set Threshold = 70.0 percent

Company	Initial Investment ($)	Purchase Price ($)	Sell Price ($)	Sell Value ($)	ROI (percent)
GCO	100.0	21.3	41.6	195.2	95.2
ANIK	100.0	10.9	37.7	347.4	247.4
GLW	100.0	12.6	19.1	151.3	51.3
AIRM	100.0	9.3	21.7	234.8	134.8

Initial NNet Investment = $400.0

Final NNet Portfolio Value = $928.7

Total Return on NNet Investment = 132.2 percent

The threshold is lowered to 50% and the Super Net picks 5 more companies – one is a big winner, three are minor winners, and one is a minor loser.

Neural Network Rule Set Threshold = 50.0 percent

Company	Initial Investment ($)	Purchase Price ($)	Sell Price ($)	Sell Value ($)	ROI (percent)
GCO	100.0	21.3	41.6	195.2	95.2
HD	100.0	59.7	78.5	131.5	31.5
MENT	100.0	8.7	14.4	165.6	65.6
ANIK	100.0	10.9	37.7	347.4	247.4
WDC	100.0	34.9	42.3	121.3	21.3
ZION	100.0	18.0	22.6	126.0	26.0
GLW	100.0	12.6	19.1	151.3	51.3
AIRM	100.0	9.3	21.7	234.8	134.8
HRL	100.0	22.1	28.3	127.8	27.8

Initial NNet Investment = $900.0

Final NNet Portfolio Value = $1600.8

Total Return on NNet Investment = 77.9 percent

The threshold is lowered to 30% and the Super Net picks 11 more companies – three are big winners, three are minor winners, four are minor losers, and one is a big loser.

Neural Network Rule Set Threshold = 30.0 percent

Company	Initial Investment ($)	Purchase Price ($)	Sell Price ($)	Sell Value ($)	ROI (percent)
GCO	100.0	21.3	41.6	195.2	95.2
HD	100.0	59.7	78.5	131.5	31.5
EFX	100.0	32.1	39.1	122.0	22.0
MENT	100.0	8.7	14.4	165.6	65.6
YHOO	100.0	14.6	18.6	127.6	27.6
NKE	100.0	63.3	89.1	140.8	40.8
PNK	100.0	13.6	24.3	178.2	78.2
ANIK	100.0	10.9	37.7	347.4	247.4
WDC	100.0	34.9	42.3	121.3	21.3
ZION	100.0	18.0	22.6	126.0	26.0
GLW	100.0	12.6	19.1	151.3	51.3
DGX	100.0	57.1	58.5	102.5	2.5
ORCL	100.0	21.8	26.0	119.1	19.1
AIRM	100.0	9.3	21.7	234.8	134.8
ERIC	100.0	10.0	12.9	129.2	29.2
BBBY	100.0	63.1	77.2	122.4	22.4
HRL	100.0	22.1	28.3	127.8	27.8
PTC	100.0	21.6	27.6	128.3	28.3
IDTI	100.0	8.5	16.0	189.0	89.0
WWW	100.0	21.2	25.7	121.2	21.2

Initial NNet Investment = $2000.0

Final NNet Portfolio Value = $3081.0

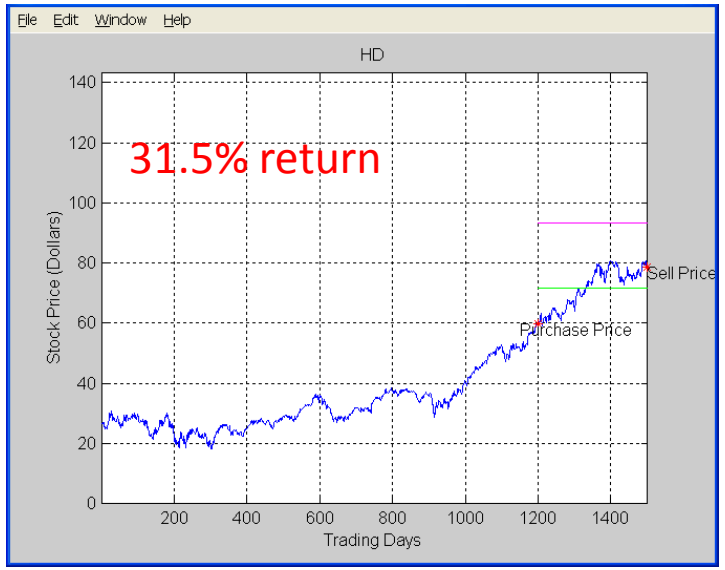
Total Return on NNet Investment = 54.1 percent

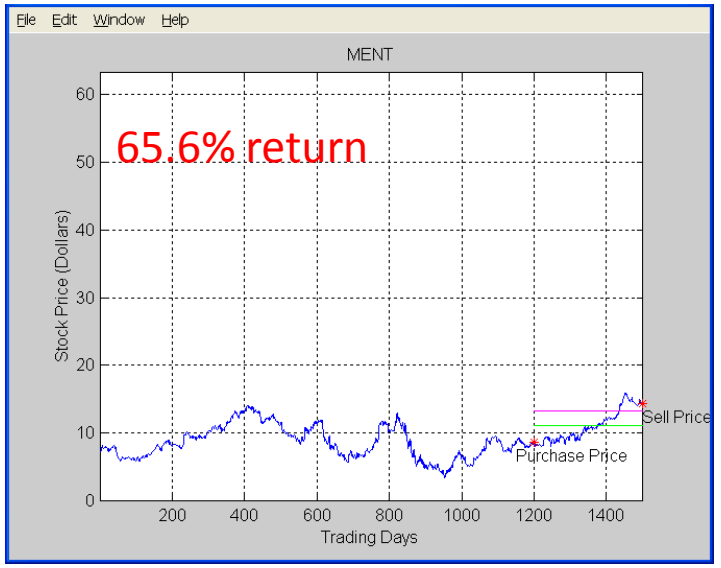
= winning stock pick that was added to the portfolio as the threshold was dropped.

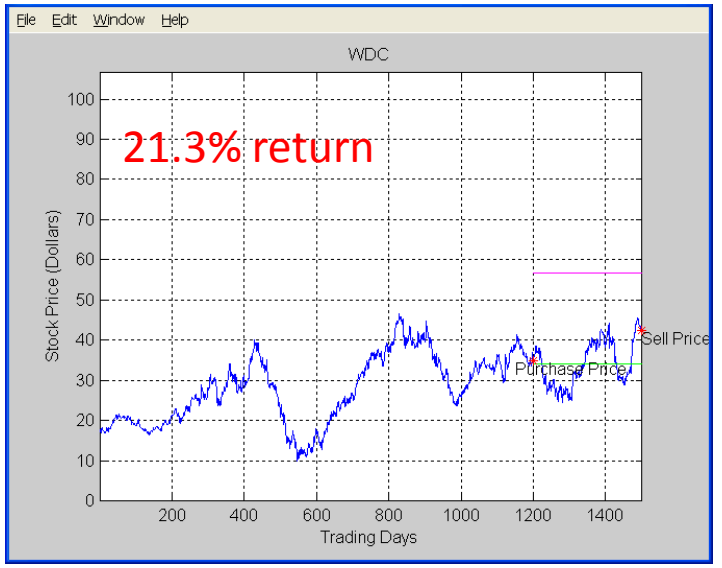
= a losing stock pick (anything less than the Market ROI of 24.4 %) that was added to the portfolio as the threshold was dropped.

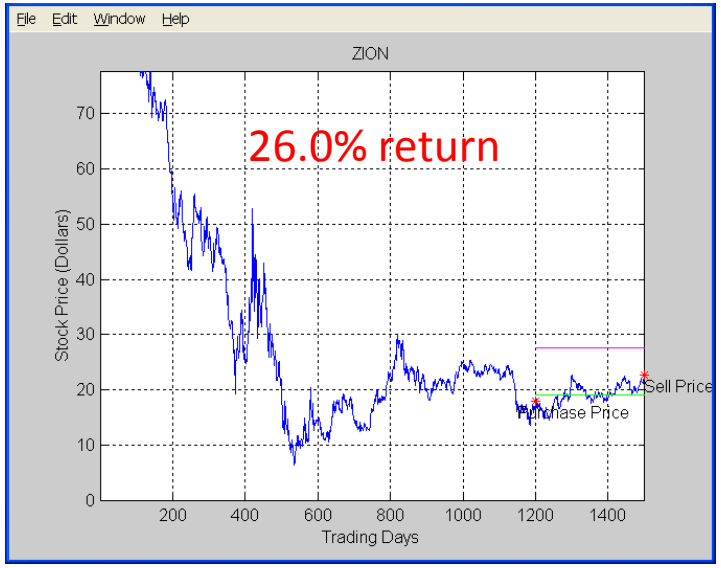
Super Net #10 Performance

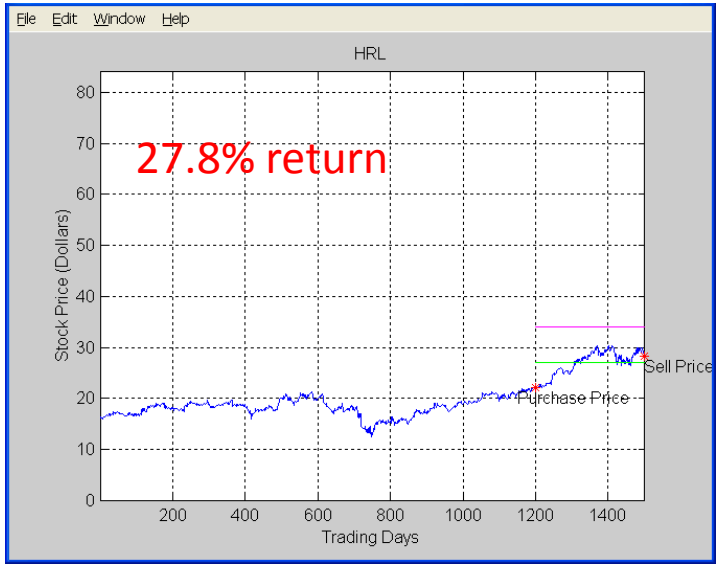
The following plots are of the five companies that were added to the mix for the 50% threshold level.











Super Net #3 Performance

The performance of Super Net #3 (Set 5) is demonstrated on the following page for threshold levels 70%, 50%, and 30%. Note that the advantage of using the lower threshold levels is that an investor can maintain a larger diversified portfolio of stocks while still achieving superior ROIs.

On the next page, performance at the 70% threshold level is shown on the top left section. The performance at the 50% threshold level is shown in the middle. The performance at the 30% threshold level is shown on the lower right section.

A green bar represents a winning stock pick that was added to the portfolio as the threshold was dropped. A red bar represents a losing stock pick that was added to the portfolio. Note that “losing stock pick” refers to any stock that performs at the same level of the market ROI (24.4% in this case) or below.

Super Net #3 Performance

Neural Network Rule Set Threshold = 70.0 percent

Company	Initial Investment($)	Purchase Price($)	Sell Price($)	Sell Value($)	ROI (percent)
WY	100.0	16.6	30.6	184.1	84.1
ANIK	100.0	10.9	37.7	347.4	247.4
GLW	100.0	12.6	19.1	151.3	51.3
AMAG	100.0	24.3	44.8	184.7	84.7
EA	100.0	12.7	26.6	210.4	110.4

Initial NNet Investment = $500.0

Final NNet Portfolio Value = $1078.0

Total Return on NNet Investment = 115.6 percent

The threshold is lowered to 50% and the Super Net picks 3 more companies – one is a big winner, and two are minor winners.

Neural Network Rule Set Threshold = 50.0 percent

Company	Initial Investment($)	Purchase Price($)	Sell Price($)	Sell Value($)	ROI (percent)
WY	100.0	16.6	30.6	184.1	84.1
YHOO	100.0	14.6	18.6	127.6	27.6
ANIK	100.0	10.9	37.7	347.4	247.4
ZION	100.0	18.0	22.6	126.0	26.0
GLW	100.0	12.6	19.1	151.3	51.3
AIR	100.0	18.4	25.6	139.5	39.5
AMAG	100.0	24.3	44.8	184.7	84.7
EA	100.0	12.7	26.6	210.4	110.4

Initial NNet Investment = $800.0

Final NNet Portfolio Value = $1471.1

Total Return on NNet Investment = 83.9 percent

The threshold is lowered to 30% and the Super Net picks 10 more companies – nine are big winners, and one is a minor loser.

Neural Network Rule Set Threshold = 30.0 percent

Company	Initial Investment($)	Purchase Price($)	Sell Price($)	Sell Value($)	ROI (percent)
WY	100.0	16.6	30.6	184.1	84.1
GCO	100.0	21.3	41.6	195.2	95.2
BEAV	100.0	33.1	45.4	137.1	37.1
ICON	100.0	18.6	25.5	137.5	37.5
CHKP	100.0	31.4	49.6	158.0	58.0
HD	100.0	59.7	78.5	131.5	31.5
EFX	100.0	32.1	39.1	122.0	22.0
YHOO	100.0	14.6	18.6	127.6	27.6
ANIK	100.0	10.9	37.7	347.4	247.4
AXTI	100.0	2.7	7.4	276.9	176.9
ACET	100.0	10.3	17.5	170.5	70.5
ZION	100.0	18.0	22.6	126.0	26.0
BAC	100.0	7.9	14.1	178.6	78.6
GLW	100.0	12.6	19.1	151.3	51.3
AIR	100.0	18.4	25.6	139.5	39.5
AMAG	100.0	24.3	44.8	184.7	84.7
ACIW	100.0	6.1	9.0	146.9	46.9
EA	100.0	12.7	26.6	210.4	110.4

Initial NNet Investment = $1800.0

Final NNet Portfolio Value = $3125.2

Total Return on NNet Investment = 73.6 percent

= winning stock pick that was added to the portfolio as the threshold was dropped.

= a losing stock pick (anything less than the Market ROI of 24.4 %) that was added to the portfolio as the threshold was dropped.

Super Net #3 Performance

The following plots are of the three companies that were added to the mix for the 50% threshold level.