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Experience

Startup Companies Founded

Nov 2019 – Present
CEO, Insight Inc, 848 Brickell Ave., 13th Floor, Penthouse 5, Miami, FL 33131-3180
Developing a systematic algorithm to eliminate "volatility" from stock/index prices. The objective is to perform intraday trades outright without hedging, and better than 80 percent accuracy. The work is based on physics and first principles (e.g., Fourier, Gaussian, Heisenberg, etc.). The target rate of return for principals is expected to average one percent per day for intraday trading. The equations are scalable from the intraday time frame to longer time frames. The system is still in development. The business plan is in three phases. For further development to succeed, the primary need is real-time exchange quality price data for a contiguous time period, such as SPY. The Engineering Methods (page 4) summarize the algorithm development over 16 dedicated years.

Sep 2000-Oct 2011
President, Large Cap Movements, LLC 10080 Palomino Road Flagstaff, AZ 86004-9102

Jun 2004 - Aug 2007
Trading 3 years. Annual return 62% using "matched pair" Pascal filters for prediction/timing of local lows and local highs. Holding period 5 days to 3 months. Stocks. No options, no margin.

Sep 2007 - Mar 2009
Mortgage crisis. Predictions correct, but timing wrong. Portfolio declined significantly. Shut down the company. Re-examined phase/delay/timing.

Employment

Modeling and Prediction

Jan 1995-Mar 1996
Senior Systems Engineer (under contract) TIMS Project Office New Orleans, LA 70123
Created a project management tool in GIS for Minerals Management Service (US Government Offshore Leasing Operations). The Office needed a leasing model with a “fair price” for each oil drilling lease area, based on various parameters, for the different locations in the Gulf of Mexico region.

Apr 1992-Dec 1994
GIS Specialist (GS-11) Boise National Forest Boise, ID 83702
Custom GIS maps, models, and databases for management. Collaborations, presentations. Built a custom database with macros to update GIS databases or automate GIS mapping. Example GIS models:

- "Forest areas likely to have archaeological sites" (logistic).
- "Forest areas likely to have catastrophic fire," (collaboration) .
- GIS deadwood ecosystem project (collaboration).

Apr 1991-Mar 1992
Game Programmer Sierra Online Oakhurst, CA 93644
Coded simulated opponent skill levels (beginner, intermediate, or advanced) for two computer games. Coded modules for executing the statistics. Wrote code to verify that the computer players were performing at the skill level expected for each category.

Apr 1990-Mar 1991
Modeling Consultant (under contract) Honeywell Controls Division Phoenix, AZ 85023
Special management project to create a turnkey modeling package, to be marketed to petrochemical refining companies. Worked in collaboration with a Ph.D. to build a custom system identification package, based in Matlab. The package read input/output data, then provided coefficients needed for optimal process control. Clients saw great cost savings. The application was sold to refineries worldwide. The Honeywell business unit was acquired 8 years later by Profimatics.

Senior Level Aerospace Engineering

Nov 1989-Apr 1990
Software Test Engineer (under contract) Delco Systems Goleta, CA 93117
Coded software simulations to check/verify the calculations of an onboard Performance Module, in the C-17 military aircraft. The simulations created flight conditions data as *inputs* to the Module, such as temperature, pressure, altitude, and velocity. The simulations also double-checked "built-in" Module function *outputs*, such as fuel required for a given mission scenario, minimum runway length needed for a given weight configuration, climb/descent corridors, and CPE error for dropping stores to ground troops in low visibility conditions. Collaborated with engineers from different contractor companies.

Apr 1989-Oct 1989
Dynamics Engineer, Sr. (under contract) Lockheed Aeronautical Systems Burbank, CA 91505
Created a model of structural dynamic properties (torsion, modal, mass distribution) for a proposed aircraft (LRAACA P-7A). Combined experimental data, scale model data, and theoretical calculations to create the dynamic properties. Wrote finite element code to estimate the vibration modes of the aircraft. Issued properties documents throughout the company. Wrote memos to inform engineering groups of updates and status. Wrote a proposal to management to procure a specialized 3-D stress visualization package. The package was procured and implemented on-site.

Apr 1987-Apr 1989
Dynamics Analyst (under contract) McDonnell-Douglas Aircraft Long Beach, CA 90808
Worked with an international collaboration of engineers to evaluate performance of an experimental propulsion system for commercial aircraft. Primary interest was noise levels, aircraft control, and structural vibration dynamics. After flight tests, ordered data and analyzed the series to determine structural responses to the propfan system. In the Flight Test Group, specified data acquisition, instrumentation, and data processing methods. In the Engineering Airframe Group, specified or implemented computer procedures for analysis (signal processing, Fourier spectrum, etc.). In the Acoustics Research Group, was a co-author of the NASA final report summarizing results of the two year test program.

Sep 1984-Apr 1987
Flight Test Analyst (under contract, secret clearance) Grumman Aerospace Calverton, NY 11933
Team member monitoring aircraft dynamics during real-time aircraft flight tests. Typical parameters included loads, dynamic vibrations, flutter, and damping modes. Post-flight, the structural responses of the aircraft were calculated from the data. Structural modes (frequency and damping) were tracked for each flight condition. Operated an advanced in-house modeling package with an optimized computing platform (TASKX). Calculated systematic structural modes data for the X-29 aircraft for over 14 months. Developed a model-making procedure at the keyboard. Wrote a user manual. Co-author of an AIAA paper discussing the merits (and the unknowns) of the package.

Sep 1983-Aug 1984
Dynamics Analyst (secret clearance) Rockwell International El Segundo, CA 90245
Specified or determined the vibration, shock, and acoustic environment on the B-1 Bomber. Worked with dynamic flight test data, determined vibration frequencies and amplitudes of particular portions of the aircraft. Specified instrumentation as needed. Performed literature searches, data reduction, and analysis. Wrote reports summarizing the results of dynamic tests.

Early Aerospace Engineering

Jan 1983-Aug 1983 Test Engineer Northrop Electronics Hawthorne, CA 90250
Vibration tests of composite structures to fatigue failure. Vibration of live electronic assemblies to verify performance in challenging ambient conditions. Designed tools and fixtures for conducting precision tests. Wrote test procedures, test reports. Designed test setups. Programmed computers for acquiring, plotting, and analyzing data.

Aug 1980-Dec 1982 Test Engineer Hughes Space & Communications Division El Segundo, CA 90245
Operational tests of spacecraft components, in a lab environment. Designed tooling and test setups for the tests and demonstrations. Ultra-high-speed flash photography, loading and deflection, vibration, and dynamic responses. Assembled two all-weather military spacecraft in a clean room.

Oct 1978-Feb 1980 Environmental Test Engineer Hughes Aircraft Company El Segundo, CA 90245
Support of environmental test equipment (per MIL 810) designed to maximize the service lifetime of military equipment by using vibration, shock, and thermal cycling tests to detect and remove weak spots in electronic components and electro-optical assemblies.

Pre-College Employment

Jan 1977-Oct 1978	Yacht commissioner. Custom sailboat outfitting.	Alameda, CA.
Aug 1973-Nov 1974	Dynamometer technician, diagnostic troubleshooting.	San Francisco, CA.
Feb 1972-Aug 1973	Mechanic at dealership. A/C, troubleshooting.	San Francisco, CA.

Education and Training

1980-1990 Proprietary in-house advanced modeling platforms (Aerospace, Secret Clearance).

Jun 1983	Northrop University, Westchester, CA	BS Mechanical Engineering	(GPA 3.2, ABET)
Jul 1993	ESRI, Redlands, CA	Advanced Arc/Info	(1 week)
Jul 1993	ESRI, Redlands, CA	GRID modeling in Arc/Info	(1 week)
Jun 1994	ERDAS, Boise, ID	ERDAS Imagine 8.1	

Computer Science

Platform MATLAB since 1990 (30 years)
Modeling MATLAB since 1990 (30 years)
Plots Visuals to understand empirical evidence from the system dynamics.
Database Examples
DJIA 1928 to 2011 (with annotation).
Econometric series, ~100+ years, 610+ series (from Historical Statistics + FRB STLS).
Stock price time series, 250 issues, large cap, 20 years OHLC (from CRSP).

Engineering Methods for Stock Data Analysis (16 years)

Nov 2019 – Present. Insight, Inc, Miami, FL (3 years, 4 months)
Low lag phase equation (lower triangular form, peer reviewed).
Three two-point integration formulas for noisy data (robust).
Visual aid, family of curves for Pascal filters (parallel lines).
Design tool, family of Gaussian LP filters (cutoff frequency, significant figures).
Gaussian coefficients sub-sampling procedure (optimum length).
Gaussian frequency response sub-sampling procedure (low noise criterion).
Replacement of raw stock prices with statistically consistent time series (in work).
Self-adapting adjustment of cutoff frequency (design concept – feedback loop).

Feb 2018-Oct 2019. Regus, Miami, FL (1 year, 9 months)
Fourier symmetry/asymmetry. Fourier transform families.
Analytic Fourier equations for special cases.

Nov 2016-Jan 2018. University of Miami, Miami, FL (15 months)
General low lag equation for FIR filters (lower triangular form), peer reviewed.
Precision frequency response in frequency sampling filter design.
Design equation for all-real A(w) from filter coefficients b.

Nov 2011-Sep 2013. Scottsdale, AZ (2 years)
Research and software development to learn low lag filter design.
Primary source Kabal (McGill University, and MathWorks) with roots procedure.
Extended the prototype design to a family of digital filters.

Jul 2009-Jul 2009. Flagstaff, AZ (1 month)
Study ALG to deduce a robust form for a phase calculation.

Sep 2000-Apr 2003. Flagstaff, AZ (3 years)
Research/coding/preparation before LCM LLC was founded.
Built database, acquired time series data for 250 stocks.
Database management system.
Token lookups, data download/updates, query system, low-lag digital filters.

Apr 1996-Apr 1999. New Orleans, LA (3 years)

Research the question: “What is a stock market?”
No preconceived ideas. Fresh slate. Seek “What seems to work.”
Simple tests, such as historic prices (noisy) and historic consumption (usually growing).
Returns of insurance companies are smooth; returns of stock market are volatile.
Fourier analysis: quasi-periodic s-l-o-w movements are buried in stock prices:
Weekly, bi-weekly, monthly, quarterly, semi-annual. Human-related.
Fourier energy spike at "intraday" frequency. Human-related.
Thus: market “volatility” is partly random and partly organized.
Performance of Pascal filters far superior to ordinary averages.

Apr 1987-Apr 1989. Long Beach, CA (2 years)

Tracked industry groups (quasi-periodic swings).
Tracked options prices (must be well into the money).

Formal Publications and In-House Documents

Feb 1999 Report on Structural Degradation at Kaibeto Campus with Recommendations
Kaibeto Boarding School, Kaibeto, Arizona.

Mar 1996 LNC Volunteer Training Manual
Louisiana Nature Center, New Orleans, Louisiana.

Jan 1993 HMPC Identifier Automates Determination of Control Coefficients
The MathWorks Newsletter, Natick, Massachusetts

Oct 1989 UHB Demonstrator Interior Noise Control Flight Tests and Analysis, NASA CR-181897.

Apr 1986 X-29A Flutter Data Analysis by Advanced Methods, AIAA-86-9737.

Jun 1986 How to Use TASKX, Grumman Flight Test Group, Calverton, New York.

Jul 1984 Predicted Vibration Levels For Equipment and Dual Pylon, B-1B
Rpt. TFD-84-1738, Rockwell International Corp., El Segundo, CA.

Jan 1984 Mounting of the Multi-Function Display and Reactions to Aircraft Env.
Rpt. TFD-84-1152, Rockwell International Corp., El Segundo, CA.

Oct 1983 ALCM Acoustic Environment on B-1B Aircraft
Rpt. TFD-83-990 , Rockwell International Corp., El Segundo, CA.

Awards and Acknowledgements

Dec 1997 Found errors in a scholars’ data: https://www.billschwert.com/mstock.htm
“... Michael Brock has pointed out that the data from 1807.05-1808.01 from Smith and Cole contain an error...”
G. William Schwert, Indexes of United States Stock Prices From 1802 to 1987,
Journal of Business, 63 (July 1990) 399-426,
University of Rochester, Rochester, NY & National Bureau of Economic Research

Mar 1996 Louisiana Nature Center, New Orleans, Louisiana.
Certificate of Appreciation for Outstanding Commitment to Naturalist Training.

Mar 1994 Boise National Forest, Supervisor’s Office, Boise, Idaho (USDA FS).
Certificate of Merit for implementing USDA Landtype Associations in a predictive modeling context.
Certificate of Merit for assistance in linking GIS on the Lowman Ranger District Deadwood ecosystem.

Volunteer Projects

Jul 1999-Jul 2012 Kaibeto Boarding School, Navajo Reservation, Kaibeto, Arizona
Authored a federal application (Form 424) to completely replace an old K-8 school. Project was funded for $28.6 million (BIA Project # Y9N5N).

Feb 25 2004	Priority list (#10)	https://www.bia.gov/node/8301/printable/pdf
Apr 28 2010	Funding (Phase 2)	https://www.bia.gov/node/7800/printable/pdf
Jul 30 2012	Video, school opening	https://www.youtube.com/watch?v=mtYZK0pX5dc

Jan 2011-Jun 2011 Battelle Science & Technology India Private LTD, India
A collaboration. Researched cheap methods for solar distillation of brackish water in rural India. Wrote solar programs in MATLAB, designed high flux system. Method was "not cheap enough" in the marketplace. Companies sell turnkey electrical solar panel systems to consumers under conventional bank loans.
https://www.battelle.org/about-us

Aug 2008-Jun 2009 The Arboretum Flagstaff, Arizona 86001
Built a new GIS database for a Ph.D. researcher from scratch. Gathered data from reliable sources. Obtained coverages or shapefiles, grid data, USDA habitat data with full attributes, and registered aerial photo tiles. Collected GPS data for paths and trails on the property. Determined GPS property boundary points with professional survey equipment. Obtained additional CAD data for the property from an engineering company.

Apr 1995-Mar 1996 Louisiana Nature Center, New Orleans, Louisiana
Naturalist docent, and volunteer trainer. Wrote a training orientation for volunteers. Created a visual presentation package to illustrate big-picture themes in nature.

References

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Interests Frequency dependent phenomena (aka "cycles") in all physical systems.
In particular, what we “see” depends on the sample rate chosen, and on the frequencies used to view the system.