

Ai-MicroCloud™ for Fintech/Financial Services

Zeblok's Ai-MicroCloud™ is particularly well suited to the needs of Fintech and other financial services companies, including lending, digital wealth, quantamental investing, risk management, valuations, regtech, and insurtech, that want to integrate pragmatic AI into their mission critical processes.

Zeblok deploys its turnkey, cloud native, quantum-safe secured Ai-MicroCloud™ wherever your data is secured – on-premises data centers, public clouds and edge locations.

Data scientists and data engineers can get started in minutes, with a simple UI, all familiar open-source frameworks, a growing library of proven, curated AI algorithms, accelerated data lake, seamless high-performance computing (HPC) orchestration and a broad network of AI solutions consulting firms. Zeblok's Portable Ai-MicroCloud™ is the most straightforward way to efficiently pipeline data and then quickly & affordably to develop, train and deploy AI/ML models.

“Zeblok's Portable Ai-MicroCloud™ is extremely powerful and easy to use. We need to expand our use of the platform to introduce multiple new products that I already know our customers want.”

Why Zeblok?

Ai-MicroCloud™: Proprietary multi-class, multi-cloud orchestration engine for AI workloads, including one-click HPC scalability

Enterprise Grade: Quantum-safe security

Ease of use: Simple UI, leveraging open-source data science tools, enables data scientists to be productive in minutes

Intelligence Marketplace: Proven, original algorithms, ready for model integration

Accelerated Data Lake: 10-15x faster pipelines and faster integration of disparate datasets

Ai-Rover™: Avoid the 84% failure rate in AI projects, with better data comprehension tool, with patent-pending explainable AI

Trusted By



Use Cases

Ai-MicroCloud™ for Fintech/Financial Services



Use Case:

AI-Driven Predictive Insights Using Sentiment Analysis

Project Statement

Thomson Reuters MarketPsych Indices (TRMI) analyze news and social media in real-time to convert the volume and variety of professional news and other information available on the internet into manageable information flows that drive sharper decisions. The indices are delivered as real-time data series that can easily be incorporated into investment and trading decision processes – quantitative or qualitative. The goal was to improve the signal-to-noise ratio and pick-up predictive signals for decision making, based on the three types of indicators provided in TRMI.

Data Used

Zeblok Computational procured TRMI data from Refinitiv, combined with pricing data in a unique project that aimed to generally understand the impact of market sentiment on returns. Application of this project include various business processes in the buy-side asset re-allocation or portfolio rebalancing, algorithmic trading desks, risk management and quantitative tolerance in Net Asset Value calculations. The goal was to improve the signal-to-noise ratio and pick-up predictive signals for decision making based on the three types of indicators provided in TRMI

- Emotional indicators such as Anger, Fear and Joy
- Macroeconomic metrics including Earnings Forecast, Interest Rate Forecast, Long vs. Short
- Buzz metrics on the asset level, i.e., Buzz, and on market-moving topics for that asset, such as Litigation, Regulatory Crackdown, Mergers and Volatility

Approach

Usually such an analysis is done by a data science expert/analyst who combines the multiple datasets with pre-existing domain knowledge to complete a univariate and multi-variate analysis to understand correlation, leading to predictive signals. Very quickly the analysis becomes a combinatorial and a time-consuming challenge. Hence the domain knowledge plays a key role in identifying attributes to combine to arrive at conclusions expediently. Additionally, quantitative basis is a key requirement to such analysis due to regulatory regime and hence explainability is mandatory. Deep learning solutions are hard to deploy where explainability is important.

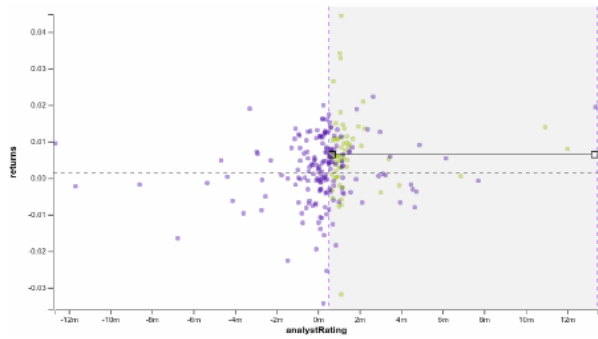
AI-Driven Predictive Insights Using Sentiment Analysis (continued)

Using Zeblok’s AI-Rover™ WorkStation our team applied its explainable-AI based software to TRMI and pricing data, using a single day price movement. The explainable-AI algorithm creates a data context map that spontaneously identify patterns. Additionally, the correlation pattern miner discovers multiple attributes that influence an outcome positively or negatively as a subpopulation. Both these are done without requiring domain knowledge.

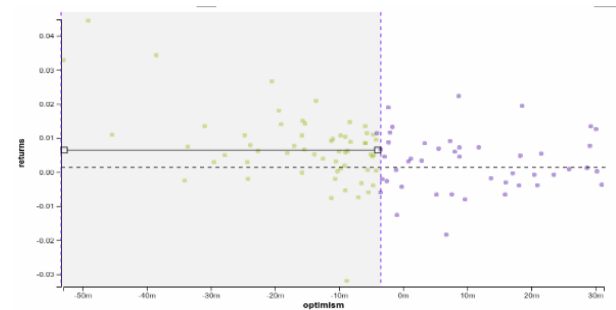
Conclusions

Most patterns include both analystRating and earningsForecast attributes. This is conveyed by these to attributes being in the center. The patterns all convey a signal in which the analyst rating contradicts what the other indicators suggest. One such pattern is shown below.

analystRating vs. Returns (stratified on Low earningsForecast)



Optimism vs Returns (stratified on Low earningsForecast and High analystRating)

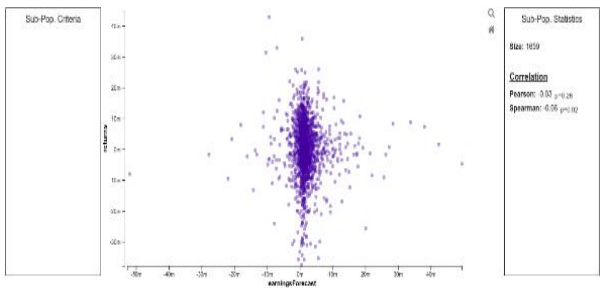


Conclusion #1: Stock indices that fall within this pattern have a higher next day return than those that fall outside the pattern 67% of the time.

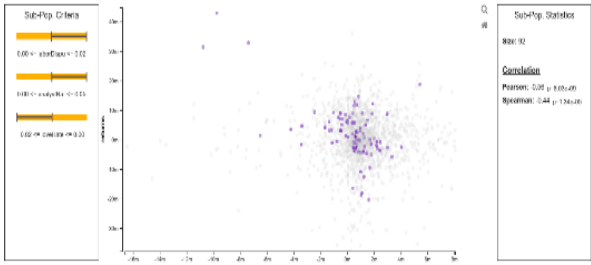
AI-Driven Predictive Insights Using Sentiment Analysis (continued)

Correlation Mining

earningsForecast vs. Returns (Univariate).

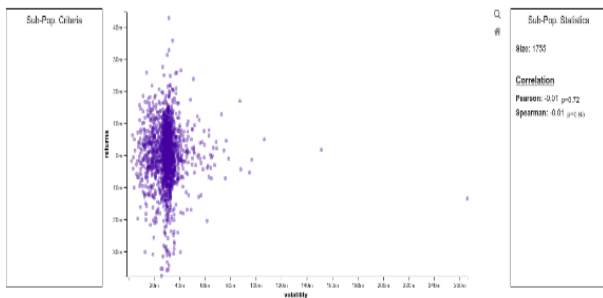


earningsForecast v.s. Returns (Subpopulation)

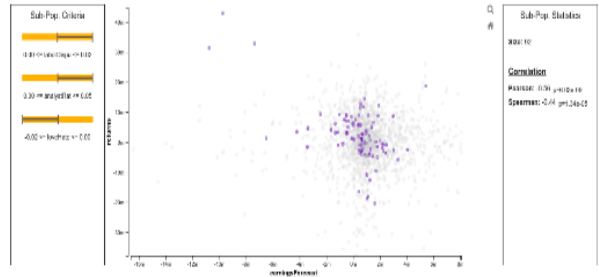


Conclusion #2: If there is a subpopulation, on High laborDispute, High analystRating and Low loveHate, then earningsForecast becomes significantly correlated with returns.

Volatility vs. returns (Univariate)



Volatility vs. Returns (Subpopulation)



Conclusion #3: Volatility does not have a significant univariate correlation with returns. If we segment on High managementTrust, High laborDispute, and High violence, then volatility becomes significantly correlated with returns.

Zeblok Ai-MicroCloud™ Resources Used

- Zeblok Ai-Rover™ WorkStation
- 7 vCPU
- 16 GB RAM
- 50 GB Block Store

Use Case: Cross Section of Annual Returns 2011-2016

Project Objective

The goal of this project is to improve the signal-to-noise ratio to identify predictive signals for decision making.

Data

We obtained financial data for a 6 year period from 2011-2016. This data includes price movements as well as financial statements for over 500 companies in the New York Stock Exchange (NYSE). Financial statements include the income statement, balance sheet and cash flows at yearly intervals. Pricing data was also obtained from which we measured annual returns as well as some common indicators (e.g. book/price, price/earnings etc.). The data was obtained through several open source websites including kaggle and yahoo finance.

Approach

Usually such an analysis is done by a data science expert/analyst who combines the multiple datasets with pre-existing domain knowledge to complete a univariate and multivariate analysis to understand correlation, leading to predictive signals. Very quickly the analysis becomes a combinatorial and a time-consuming challenge. Hence the domain knowledge plays a key role in identifying attributes to combine to arrive at conclusions expediently. Additionally, quantitative basis is a key requirement to such analysis due to regulatory regime and hence explainability is mandatory. Deep learning solutions are hard to deploy where explainability is important.

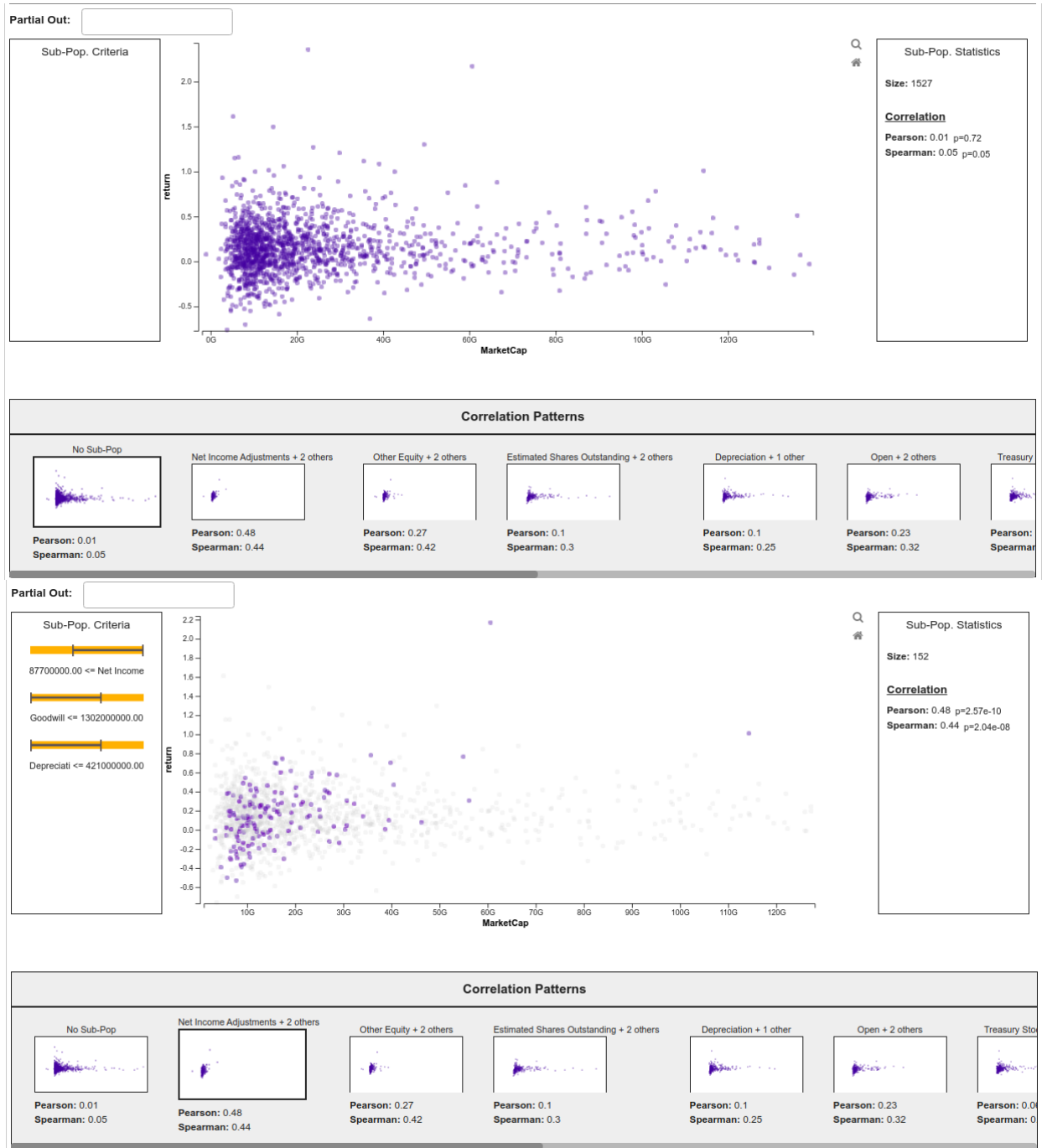
Using Zeblok's AI-Rover™ WorkStation our team applied its explainable-AI based software to the fundamentals and pricing data. The explainable-AI algorithm creates a data context map that spontaneously identifies patterns. Additionally, the correlation pattern miner discovers multiple attributes that influence an outcome positively or negatively as a subpopulation. Both these are done without requiring domain knowledge.

Conclusions

There are not many strong univariate correlations. The highest univariate correlation is between Book-To-Price and Returns (Pearson: -0.15 , Spearman: -0.14). There are, however, several sub-populations in which the correlations with annual returns is much higher. Some of these are shown below.

Cross Section of Annual Returns 2011-2016 (continued)

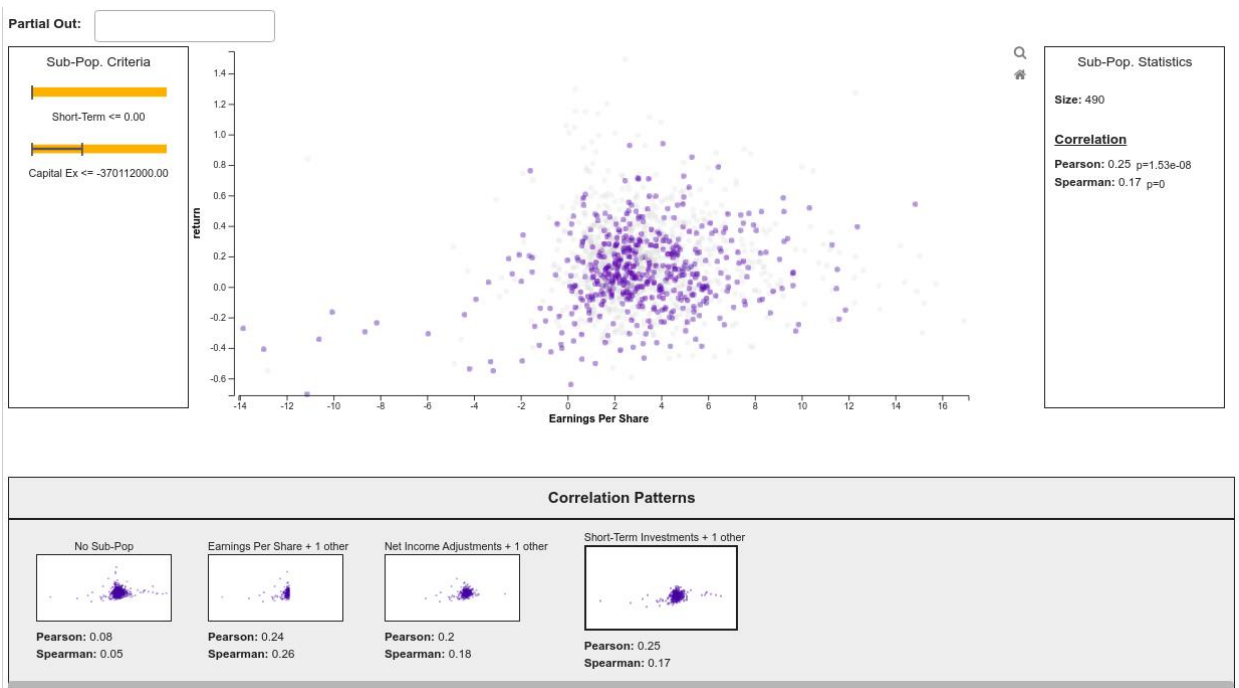
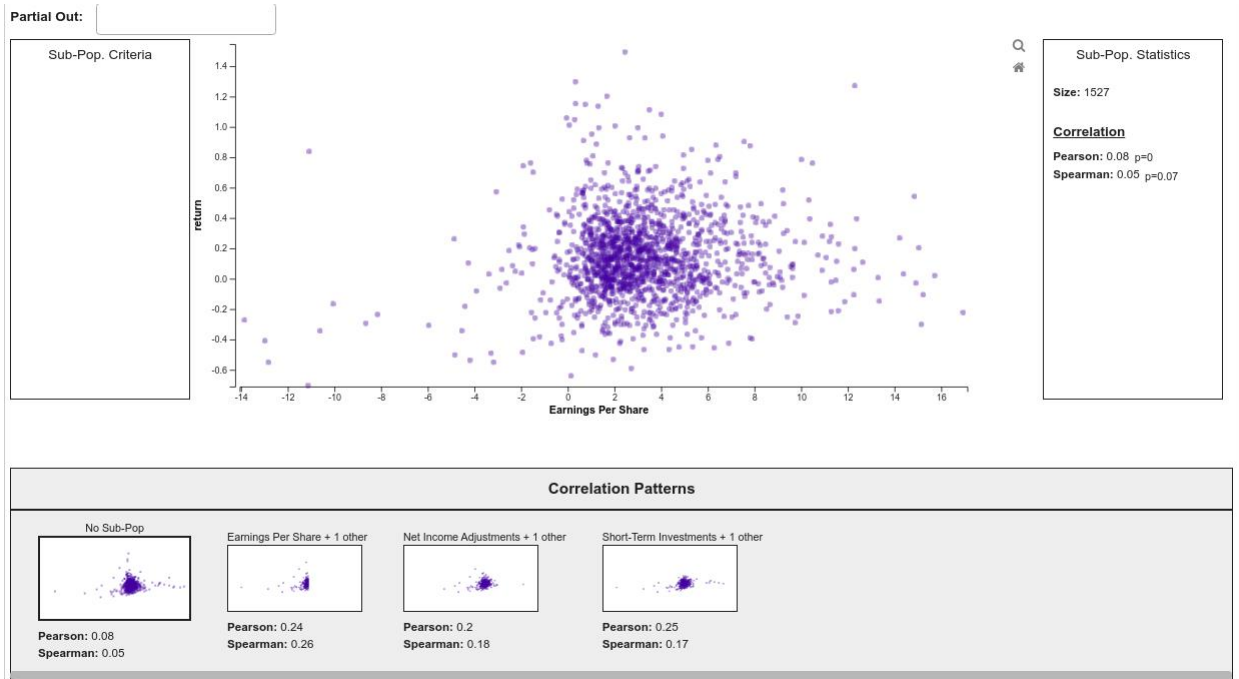
Correlation of Market Cap and Annual Returns (Pearson:0.01, Spearman: 0.05)



Conclusion 1: Market Cap. and annual returns are correlated (Pearson: 0.48, Spearman: 0.44) when Net Income Adjustments are high, Goodwill is low and Depreciation is low.

Cross Section of Annual Returns 2011-2016 (continued)

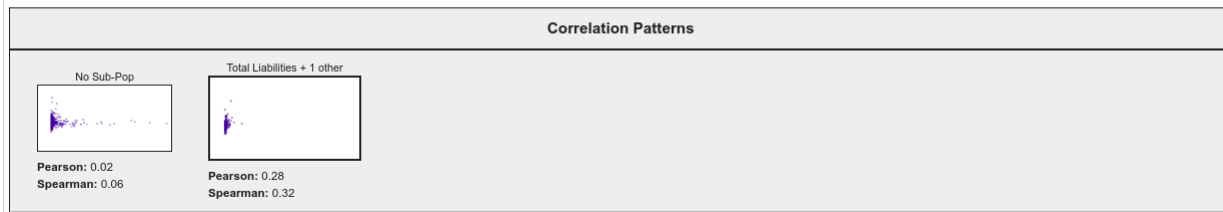
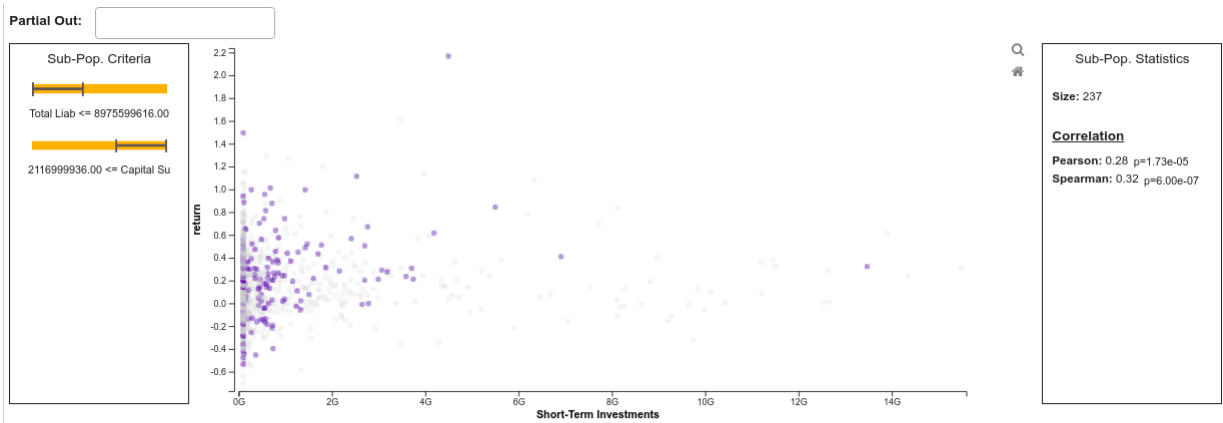
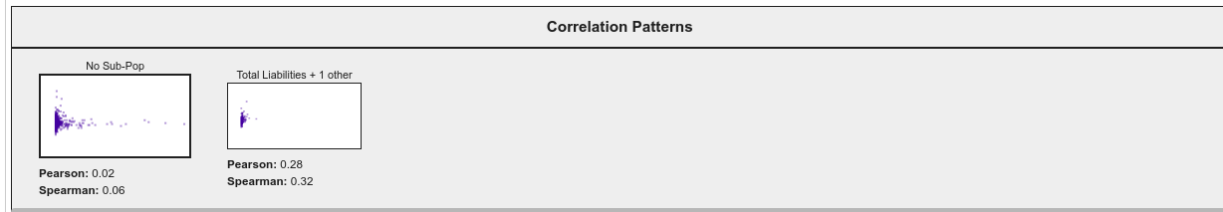
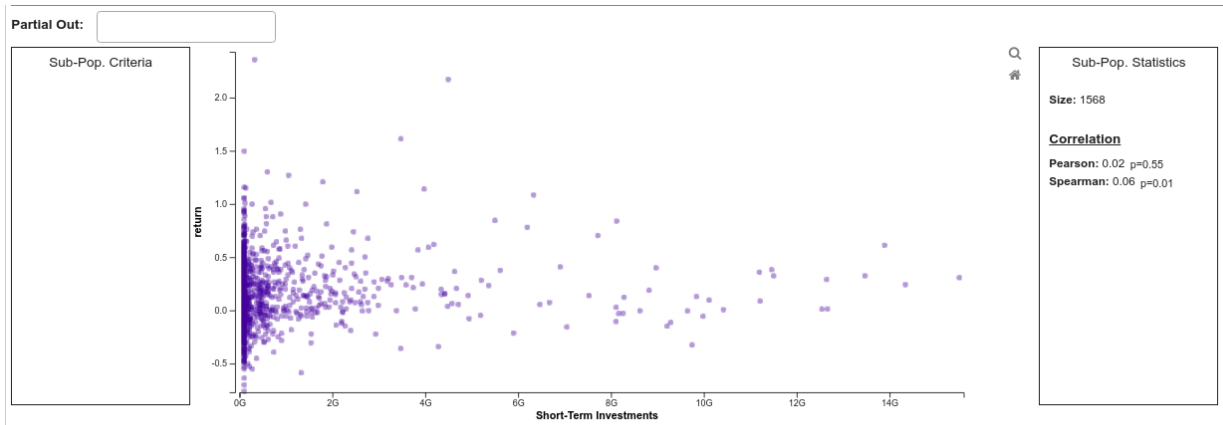
Correlation of Earnings Per Share and Yearly Returns. (Pearson: 0.08, Spearman: 0.05)



Conclusion 2: Earnings per share is correlated with annual returns (Pearson: 0.25, Spearman 0.17) when there are no short term investments and high capital expenditures.

Cross Section of Annual Returns 2011-2016 (continued)

Correlation of Short-Term Investments and annual return has low correlation (Pearson 0.02, Spearman: 0.06)



Conclusion 3: Short-Term Investments and Yearly Return is correlated (Pearson 0.28, Spearman: 0.32) when Total Liabilities is low and Capital Surplus is high.

Platform Features Overview

Portable Ai-MicroCloud™, including **Turnkey HPC Orchestration** and an **Intelligence Marketplace** for curated algorithms

- **Ai-WorkStation:** Customized and virtualized Jupyter Notebook, with access to all familiar open-source frameworks, accelerated data lake and AI algorithms via a simple web interface
- **Ai-HPC-WorkStation:** simple workload distribution to hundreds of GPUs for AI/ML model development, training and simulations
- **Accelerated Data Lake:** Enables a 10-15x reduction in search time
- **Intelligence Marketplace:** Growing library of carefully curated original AI algorithms, including exclusively in-licensed patent-pending software
Easy to read, easy to use and easy to share
We fast-track adoption of the best AI algorithms from academia and AI startups
- **Cloud Native:** Scalable architecture running in modern, dynamic environments using containers and declarative APIs
- **Ai-Rover™:** Analytics and data visualization notebook – domain-agnostic data discovery tool for large multi-variate high dimensional data analysis, using patent-pending explainable AI algorithm, exclusive to Zeblok
Provides crucial data comprehension step as starting point for AI model development – patterns, correlations and causation
- **Quantum-Safe Entropy-as-a-Service:** Truly random numbers, generated by single photon detection (SPD) technology, delivered via container for integration within existing encryption key management
- **Runtime Environment:** Finished model pipeline is easily promoted to a runtime API, including inferences running at the Edge
- **Multi-Cloud from Core to Edge:** Zeblok deploys its Ai-MicroCloud™ anywhere, including enterprise data centers, public clouds and Edge locations

Partner Programs

- **Frontier:** CSPs and MSPs upsell Ai-MicroCloud™ to remain competitive; Specialized Hardware Manufacturers use Zeblok's orchestration to enable AI workloads on their hardware
- **Ingenuity:** Algorithm originators are able to develop their software more easily on our Ai-MicroCloud™ and we facilitate commercialization by including their algorithms in our Intelligence Marketplace
- **Insight:** Data providers benefit from our accelerated search capabilities
- **Build Intelligence Services:** Broad network of AI solutions firms help integrate AI into enterprises' mission-critical process

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