



One Stop AI Shop!

Overview



CEO and Company Profile

About AlgoAnalytics

Analytics Consultancy

- Work at the intersection of mathematics and other domains
- Harness data to provide insight and solutions to our clients

Led by Aniruddha Pant

- +30 data scientists with experience in mathematics and engineering
- Team strengths include ability to deal with structured/ unstructured data, classical ML as well as deep learning using cutting edge methodologies

Expertise in Mathematics and Computer Science

- Develop advanced mathematical models or solutions for a wide range of industries:
- Financial services, Retail, economics, healthcare, BFSI, telecom, ...

Working with Domain Specialists

- Work closely with domain experts – either from the clients side or our own – to effectively model the problem to be solved



Aniruddha Pant

CEO and Founder of AlgoAnalytics

PhD, Control systems, University of California at Berkeley, USA 2001

Highlights

- 20+ years in application of advanced mathematical techniques to academic and enterprise problems.
- Experience in application of machine learning to various business problems.
- Experience in financial markets trading; Indian as well as global markets.

Expertise

- Experience in cross-domain application of **basic scientific process**.
- Research in areas ranging **from biology to financial markets to military applications**.
- Close collaboration with premier educational institutes in India, USA & Europe.
- Active involvement in startup ecosystem in India.

Prior Experience

- Vice President, Capital Metrics and Risk Solutions
- Head of Analytics Competency Center, Persistent Systems
- Scientist and Group Leader, Tata Consultancy Services

AlgoAnalytics - One Stop AI Shop



BFSI

- Dormancy Analysis
- Recommender System
- Credit/Collection Score



Retail

- Churn Analysis
- Recommender System
- Image Analytics



Healthcare

- Medical Image Diagnostics
- Work flow optimization
- Cash flow forecasting



Legal

- Contracts Management
- Structured Document decomposition
- Document similarity in Text Analytics



Internet of Things

- Predictive maintenance in ovens
- Air leakage detection
- Engine/compressor fault detection



Others

- Algorithmic trading strategies
- Risk sensing – network theory
- Network failure model

- We use structured data to design our predictive analytics solutions like churn, recommender sys
- We use techniques like clustering, Recurrent Neural Networks (RNN), Convolutional Neural Networks (CNN)

Structured Data



- We used text data analytics for designing solutions like sentiment analysis, news summarization and many more
- We use techniques like natural language processing, word2vec, deep learning, TF-IDF

Text Data



- Image data is used for predicting existence of particular pathology, image recognition and many others
- We use techniques like deep learning – convolutional neural network, artificial neural networks and technologies like TensorFlow

Image Data



- We use sound data to design factory solutions like air leakage detection, identification of empty and loaded strokes from press data, engine-compressor fault detection
- We use techniques like deep learning

Sound Data



Data Science for Banking and Financial Services



Predict Dormancy – Finding which clients are unlikely to transact and take action



Recommender System – Suggesting products likely to increase chance of action for a particular customer, cross-up sell



Dormancy visualization Identifying KPIs for visualizing *Dormancy*



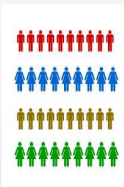
RM change – Assessing impact of change of relationship manager on trading activity



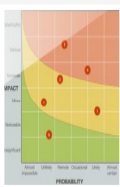
Mobile Brokerage – Origination, pricing and valuation of loans



Dynamic pricing models - Predicting brokerage slabs and sensitivities of trading volumes to broking charges



Channel adoption and preference – Use demographics and trading data to build a classification model



Portfolio Analytics – Analysis of client portfolio and suggestions for changes as per risk profile



Credit score – Application, behavior and collection scores, estimation of default



Document similarity in text analytics – Automatic email classification, determining the topic of complaint etc.



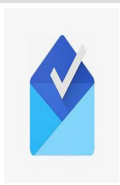
Automated news download – downloading news that is relevant for customers



Sentiment analysis – Using text analytics to decide customer response to various offerings



News Summarization – Automatic download of relevant news items, News summarization

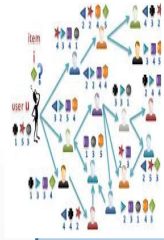


Automated E-mail responses – Responding automatically to client email queries, directing email to right account



Analytics and loans – Origination, pricing and valuation of loans

Analytics in Retail Domain



Recommender system

- Analysis of user behavior for personalized shopping experience
- Product recommendations for upselling and cross selling



Supply chain logistics

- Sales forecasting and inventory management
- Returns prediction for efficient logistic solutions



Image Analytics in Retail

- Image recognition – item tagging, differentiating between original and duplicate, substitute product
- Generating image descriptions



Marketing

- Customer segmentation for focused marketing
- Brand marketing – customizable ad placement



Customer churn preventions

- Improved customer engagement
- Loss prevention through customer retention

Machine Learning for Healthcare

Patient Aid



Medical diagnostics – Detect serious disorders or diseases through image analytics and medico-genomic data



Reducing Readmissions – Use scoring techniques to locate high risk customers and prevent readmissions through higher monitoring



Population Health Management - Vast amount of past patient data/genomics data utilized for diagnosing high risk group through risk stratification score

Revenue Cycle Management



Cash Flow Forecasting – Forecasting of cash flows based on claims history, potential denials to forecast cash and reimbursement analysis



Billing Errors– Identify opportunities to collect missing income, including rejected claims by payers or overdue money from patients



Patient Selection - Insurance coverage eligibility, identifying patients who are not likely to pay in full

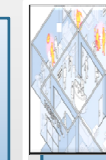
Resource Allocation



Work Flow Optimization– Using historical data for staffing to reduce costs, having the right clinician at right time right place



Fraud and abuse prevention - Cost trending-forecasting, care utilization analysis, actuarial & financial analysis -common applications for preventing frauds



Efficient Use of Hospital Resources – Prevent bottlenecks in urgent care by analyzing patient flow during peak times

Other issues in Healthcare



Trend Analysis - Tracking hospital's market position and competitive trends. Visualizing changes in market dynamics and growth patterns



Grant problem - Predict the likelihood that a particular proposal will receive a grant using text analytics

Mutual Fund Action Predictor – Approach and Results

Predictive Algorithm

- The product offers insights into portfolio changes that MFs are likely to make

Trade initiation

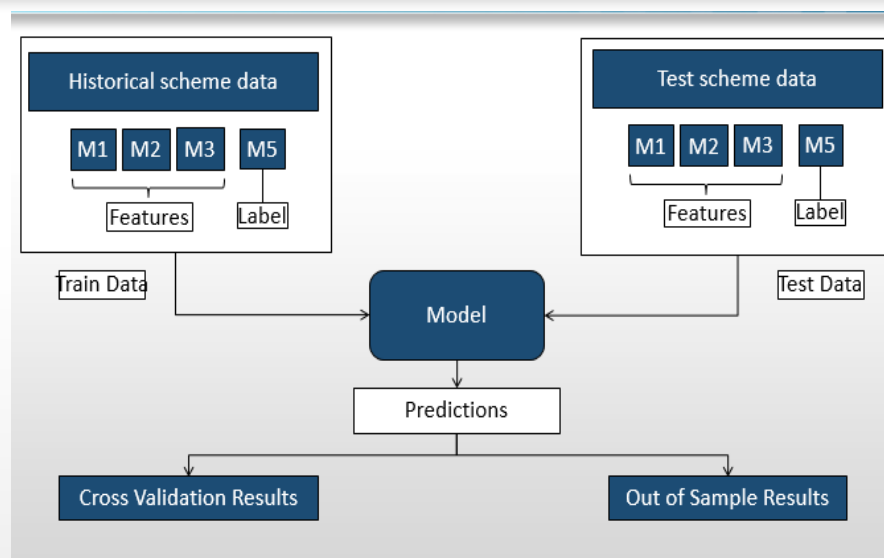
- Intermediaries can use the information to identify counterparties for their clients or to initiate trade between two parties

Reducing impact cost

- A brokerage can target different mutual funds to pro actively for buying or selling a large position in stock with minimum market impact

Buy – Sell pressure

- One can also use this to compute expected buy sell pressure on stock in near future



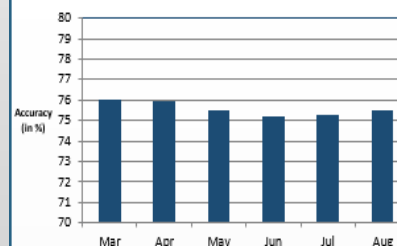
Fund Movement Prediction : Universe

- Universe/ data preparation
 - 996 stocks are considered for prediction
 - MF schemes having AUM > 100 cr, 236 in total
 - Data set contains scheme details from Sept 2012.
 - Equity and Balanced schemes are includes; index and debt schemes excluded.
- Examples of features used: Volume/ Exchange Rate/ NAV etc
- Predictions are made for all stocks that have been held by at least one scheme in the month before the previous month.

CV Results

Accuracy	Sensitivity	Specificity	Prevalence
75.58%	67.89%	68.87%	50.97%

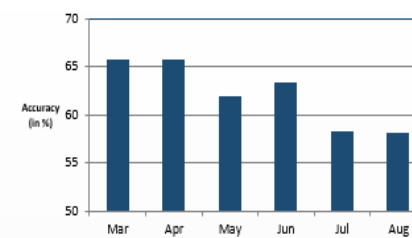
Comparison of Month-wise Accuracy



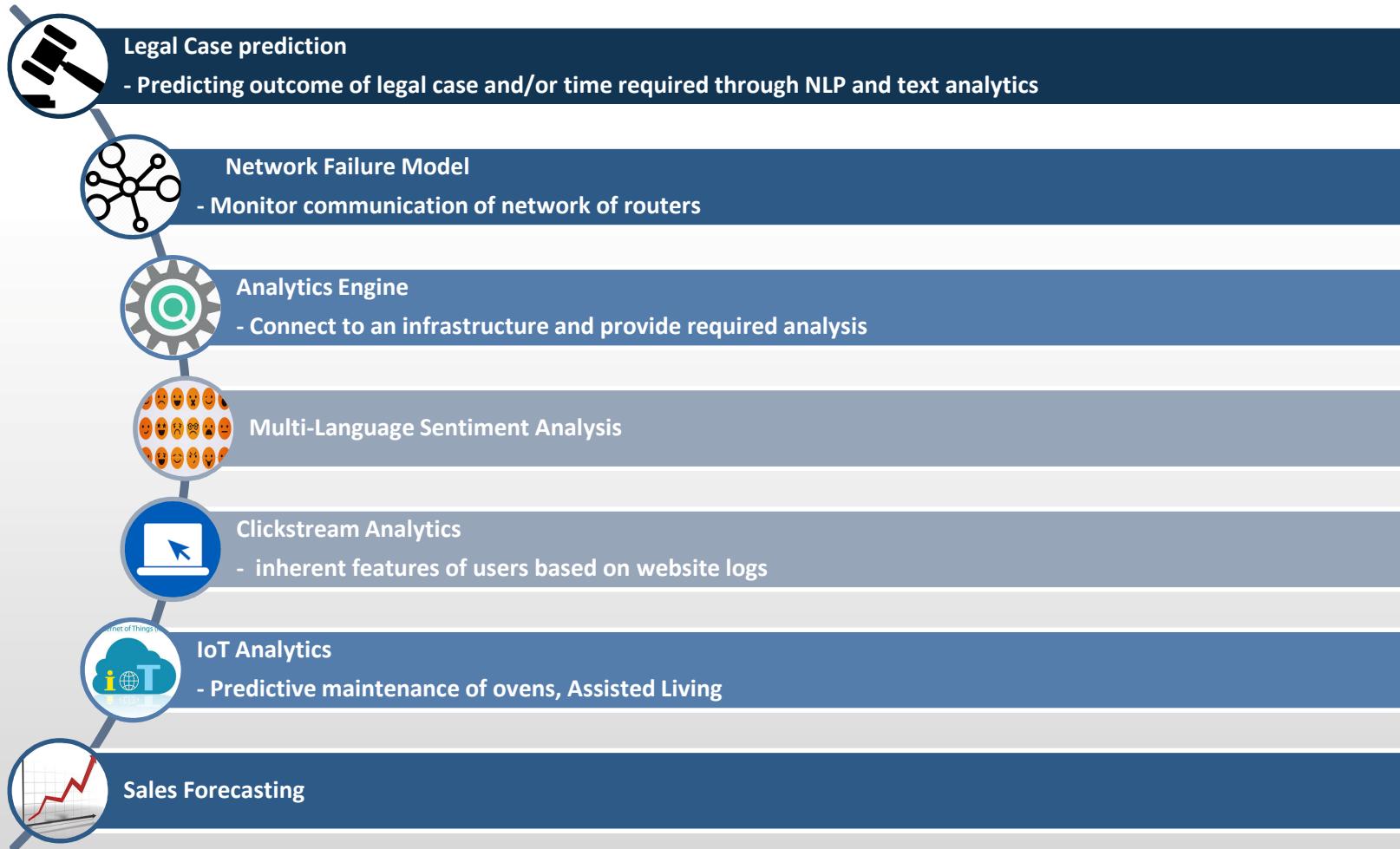
OOS Results

Accuracy	Sensitivity	Specificity	Prevalence
62.30%	65.14%	60.06%	44.09%

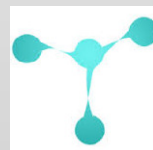
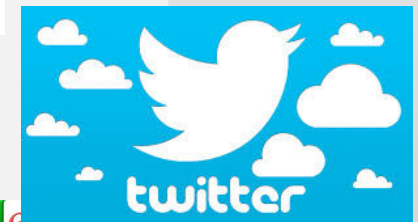
Comparison of Month-wise Accuracy



Some Other Analytics Projects



Technology:



H₂O





Interested?
Contact: info@algoanalytics.com