Binah.ai Mission

Making data science accessible with out-of-the-box use cases, combining Signal Processing and AI to deliver previously impossible levels of accuracy, stability and performance.
Binah.ai Traction and Execution

**binah.ai**
- Founded: 2014
- Location: Tel Aviv, Israel
- Employees: 24 (13 PhD’s)

**Awards**
- 1st Place: FINTECH JUNCTION (2018)
- 1st Place: TAU INNOVATION CONFERENCE 2018
- 1st Place: BBVA Open Talent 2018

**Customers**
- Three out of the world’s top 10 banks
- Israel’s leading financial companies
- Largest Automotive Tear-1 supplier

**Customer Acquisition**
- Partnering with KPMG
- Ready to use use-cases including pure SaaS
- Added value: Up to 90% cost and time savings

**Market Size**
- Total Available Market: Fortune 2000 financial organizations
- Serviceable Available Market: North America, EMEA and ASIA
- Top 20 automotive vendors
Chosen Use Case:  
**Turnkey Data Science Projects**
Solves most common data science challenges: Anomalies, Classifications and Predictions

Business Solution:  
**BinahNOW** - end-to-end solution focused on delivering business results. Provide rapid ROI by using Out-of-the-box use cases

Flexible availability – Cloud, premise, or any way you need  
Accelerated integration with any system
Delivering out-of-the-box, ready-to-use use cases at previously impossible levels of accuracy, performance and stability

Customers

Credit Risk
- Consumer credit risk for a loan
- Consumer credit risk rating
- Corporate bonds analysis
- Non-tradable bond pricing
- Early loan redemption CV

Insurance
- Heart Rate Variability-Weight calculation & Cognitive/Stress prediction
- Faster, Customized Claims Settlement
- Behavioral Policy Pricing
- Customer Experience & Coverage Personalization
- Revenue prediction

Marketing
- Customer Churn
- Customer Segmentation
- Next product offer (online/offline)
- Manufacturing efficiency/optimization

Operations
- Anomaly detection
- Derivatives taxation
- Reserve calculation
- Total deposits prediction
- Transaction anomaly detection

Capital Markets
- FX / WMR prediction
- Volatility Analysis
- Metal trend prediction
- Index prediction
- Any Tradeable Assets
Binah’s SaaS Architecture - Capital Markets

SaaS Data Sources:
- Thomson Reuters
- Bloomberg
- FactSet
- Capital IQ
- Customers Data

Google / AWS / Azure – Cloud
(Can also be implemented locally)
- Fully optimized and managed service by Binah.ai
- Dedicated Virtual Private Cloud in redundancy
- Optimized computation and software architecture
- Customizable Interfaces and billing solutions

Binah.NOW – in HA

Data Sources DC1

Data Sources DC2

Data Dispatcher in HA

External Integration

Pre-Processing

Prediction

Integration

Auto Daily Re-Train and Self Optimization

SaaS Capital Market use cases:
- FX / WMR prediction
- Metal trend prediction
- Index prediction
- Volatility Analysis
- Tradeable Assets

Customer Integration
- Mail
- API
- etc.

Company Overview | August 2018
Data is the new fuel. **How do you get the most mileage?**

**Bad Data Gives Poor Results**

- Bad data-based decisions cost **$3.1T** yearly (IBM)
- Average losses from bad data were **12%** of overall revenue (Experian Data Quality)
- 27% of data in the world’s top companies is flawed (Gartner)
- 77% big data and analytics strategists say it’s 6 mo. before meaningful business value seen (ESG)

Binah answers the challenge by reducing the noise: **Signal Processing strengthens data value & accuracy**

*https://insidebigdata.com/2017/05/05/hidden-costs-bad-data/
Binah’s Core IP: **Signal Processing with AI**

**The Secret Sauce of AI: Signal Processing!**

Delivering Previously Impossible level of Accuracy, Stability and Performance!

By its nature, data isn’t clean. Signal processing strengthens data value and accuracy, performance, and the stability of the end results, making it a critical tool in data preparation.

- Critical to data preparation
- Eliminates the outliers
- Creates clean data
- Reduces the noise
- Streamlines data volume
- Delivers a better overall data set

Signal processing helps eliminate the outliers, generate new signals create cleaner data, reduce the noise, streamline data volume, and deliver a better overall data set.
Binah took the hard path and implemented it’s own mathematical backend!

**Binah’s Breakthrough Solution**

**Linear algebra**
- Matrix manipulation
- Tensors
- Decompositions
- Factorization
- Elementary functions

**Machine Learning**
- k-Means clustering
- Least-angle regression
- Linear regression
- Perceptrons
- PCA
- LDA
- Nearest-neighbor search
- Support vector machines
- Basic neural network definitions
- Back propagation
- ANN
- Bayesian network

**Signal processing**
- Filtering
- FFT, Hadamard
- De-noising
- Convolution
- Independent component analysis

**Deep Learning**
- Simple auto-encoders
- Convolutional neural networks
- Convolutional auto-encoders
- Deep recurrent networks (RNN)
- LSTM and convolutional LSTM
- Boltzmann machines
- Deep Boltzmann machines
- Restricted Boltzmann machines (RBM)
- Deep belief neural networks

**Binah’s Custom-built, Multilayered AI Frameworks**

**Data/Modeling**
- Anomaly detection
- Classification
- Prediction
- Regression
- Statistical analysis
- Time series
- Computer vision

**Pre-process**
- Rearrange Data
  - Signal Processing
    - Clean from missing data
    - Normalize data
    - PCA
    - ICA
    - Filter data
    - Validate data

**API**
- Import data
  - Pre-process
    - Rearrange data
      - Signal processing
        - Best ML algorithm
          - Training scenario
            - Series of ML algorithms
              - Train model
                - Score and save all stage models
                  - Test new data
                    - Make response
                      - Retrain if need
                        - Analyze

**Data source**
- Large scale of formatted data
  - CSV file
  - DICOM
  - Databases
  - Images / video
  - Structured
  - Unstructured
  - Semistructured

**Best ML-algorithm Training scenario**
- Choose which training algorithm suitable
- Create scenario to create feature extraction
- Create scenario for classifier
- Prepare to parallelize training
- Activate needed data splitting
Why Data Science Fails

Gartner: “84% of Artificial Intelligence projects never gets to production.”

Undefined business goals and inappropriately transforming them to research tasks

Inability to build and apply a uniform data set across organization

Investment in “sexy” algorithms instead of useful ones

Data Scientists are not an engineers

Inappropriate data or infrastructure

Failure to differentiate between academia and the real world
**Business Model - POC to Production**

**SaaS POC to production life span**

- **Definitions & Clarifications** 1 week
- **POC** 2-4/8 weeks
- **Productization & Deployment** 2-8 weeks

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- **Well defined KPI’s**
- **Get the entire data for appropriate design of a solution**
- **The Product can go both ways:**
  - Internal integration (Interreact with internal data teams, etc.)
  - Pure SaaS (we do everything and send over the predictions)
- **Binah.NOW** - The delivery is software as a service. (in the cloud or on prem)
First company to combine Signal Processing to Minimizes bad data

Proprietary, backend framework developed for real-time environments

Out-of-the-box use cases quickly deliver the answers to Financial Industry's critical questions

10x faster time to market and delivery cycle with 90% reduced time and cost

Achieve a minimum 40% accuracy increase from the unrealized potential of the model

Use AI to solve almost any challenge without spending millions on custom-created, in-house research and massive hiring

**Binah.NOW Technology**: a behind-the-scenes virtual data science platform combining signal processing and machine learning that accelerates the path from data to insights, delivering best-in-class models in terms of accuracy, performance and stability
Thank You

Alon Shem-Tov
VP International Sales
Alon.Shemtov@binah.ai