Binatix, Inc. Snapshot

- Binatix develops Sense Making software based on machine learning algorithms that mimic the human brain.

- The challenge: **Data Explosion**;
  - Too much data, too few people. How to make sense of it all?

- The solution: HDRN– the world’s strongest deep machine learning platform for large-scale data sets.
  - Robust pattern inference/classification
  - Temporal (behavioral) recognition
  - Data fusion across multiple modalities
  - Autonomous learning (not rules-based)
  - Fast and resource efficient
Spatial & Temporal Recognition Demos

Human-like nature of HDRN:

- These spatial pattern recognition demos:
  - Learned w/o human assistance
  - No feature extraction phase
  - Robust to lighting, viewing angle, size

- Temporal recognition/inference:
  - Spoken language identification demo in the presence of heavy noise & reverberations

- Spatiotemporal demo under dev.
Overcoming the *Curse of Dimensionality*

- **Mainstream approach:** feature extraction for dimensionality reduction
  - Always application-specific
  - Typically degrades when noise/distortions are present

- **Binatix approach:** hierarchical machine learning architecture comprising of identical cortical circuits
  - Salient features, representing regularities, are formed from raw input (e.g. pixels)
  - Invariant features are utilized for “understanding”
  - Robust in presence of noise and other distortions
  - Application independent
  - No need for any feature extraction
Spatiotemporal information representation

- A Cortical circuit represents both spatial and temporal information.

- Hierarchy of identical cortical circuits captures short & long-term temporal dependencies:
  - e.g. recognize regularities separated by large time intervals
  - Considers the spatial properties and their evolution over time

- Invariant to common distortions (e.g. in images – noise, lighting conditions, viewing angle, perspective, other transforms)

- No need for any pre-training or parameters tweaking

- GPU-based implementation offers great scalability
Good targets for HDRN:
- Salient features are hard to define:
  - Human can recognize a pattern but find it hard to articulate
- Myriad of data from many sources:
  - Human can no longer cope.
    Parallel use of GPUs and servers
- Multi-modal large dataset
  - Find patterns, analyze, predicts

Binatix Interests:
- Apply our research to a real-life important problem
- Join a winning team as a sub

THANK YOU

Contact us:
E-mail: nadav@binatix.com
Web: www.binatix.com
Phone: (650) 279-6969