



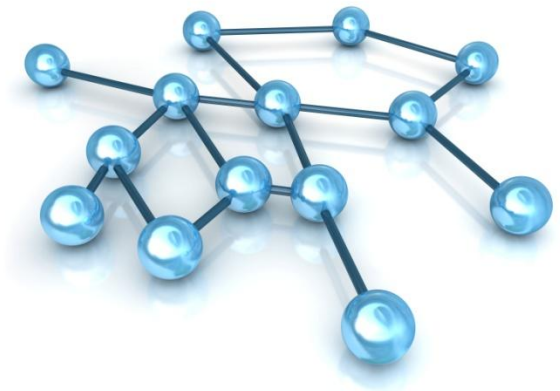
ingenio

World in motion: Dynamic Decision Systems

A neural networks improvement to match the dynamics of economy today

Iuliana Maria, Risk Manager

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Introduction: How does the mind work?

I. Pattern Recognition Performance

II. Dynamic Risk Modeling

III. Ingenio proposal

Intelligent, human-like software based on a neural decision engine.

The human mind does not read every letter by itself, but the word as a whole.

Neural Networks are the core of our engine.

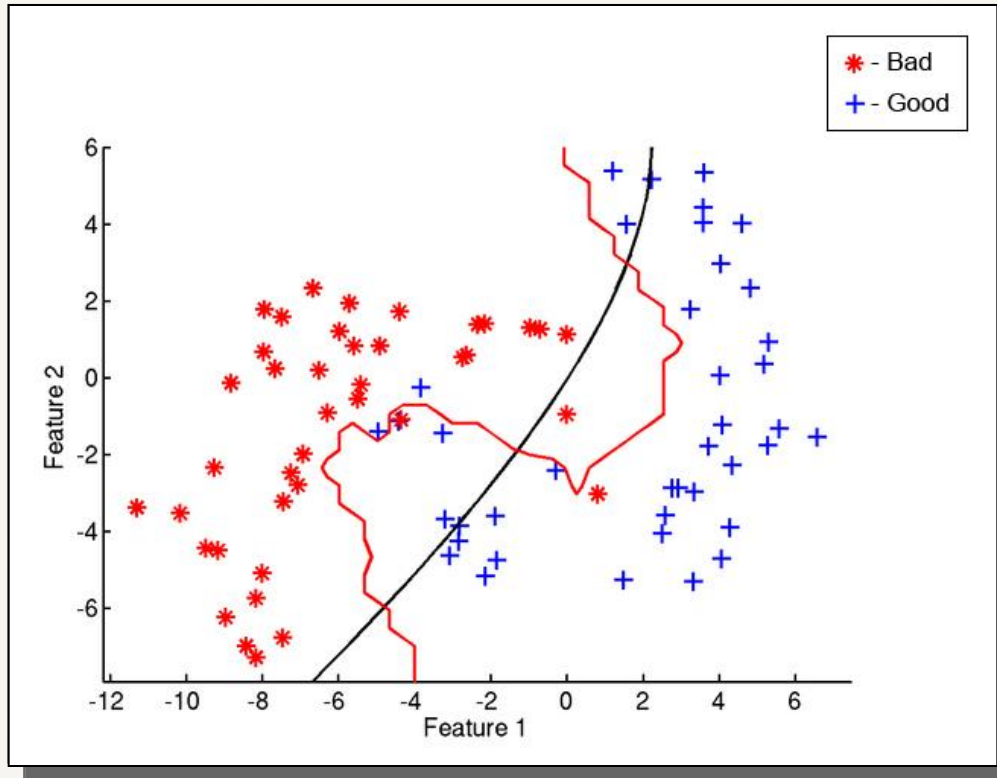
“We are evolving towards the reengineering of the human mind”

Ray Kurzweil

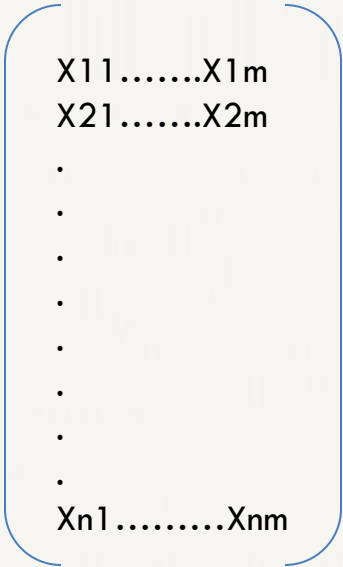
Boeing - intelligent flight control

Visa - neural fraud detection

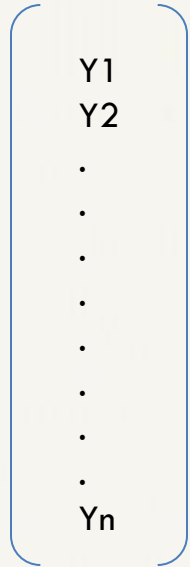
I. Pattern Recognition Performance



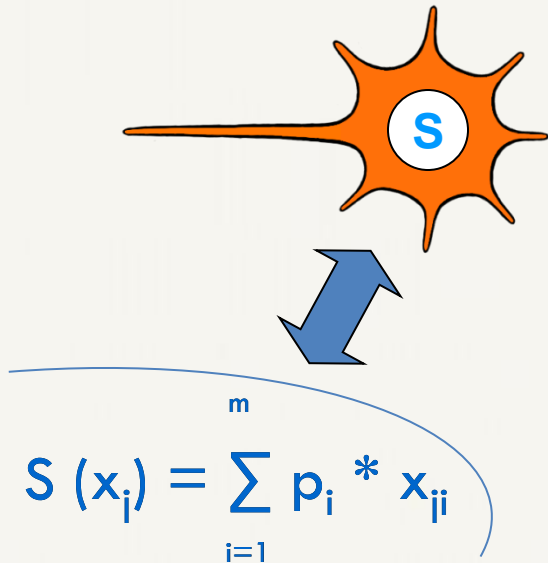
Complex data structure in a two-dimensional space



Initial scoring data



Historical outcome

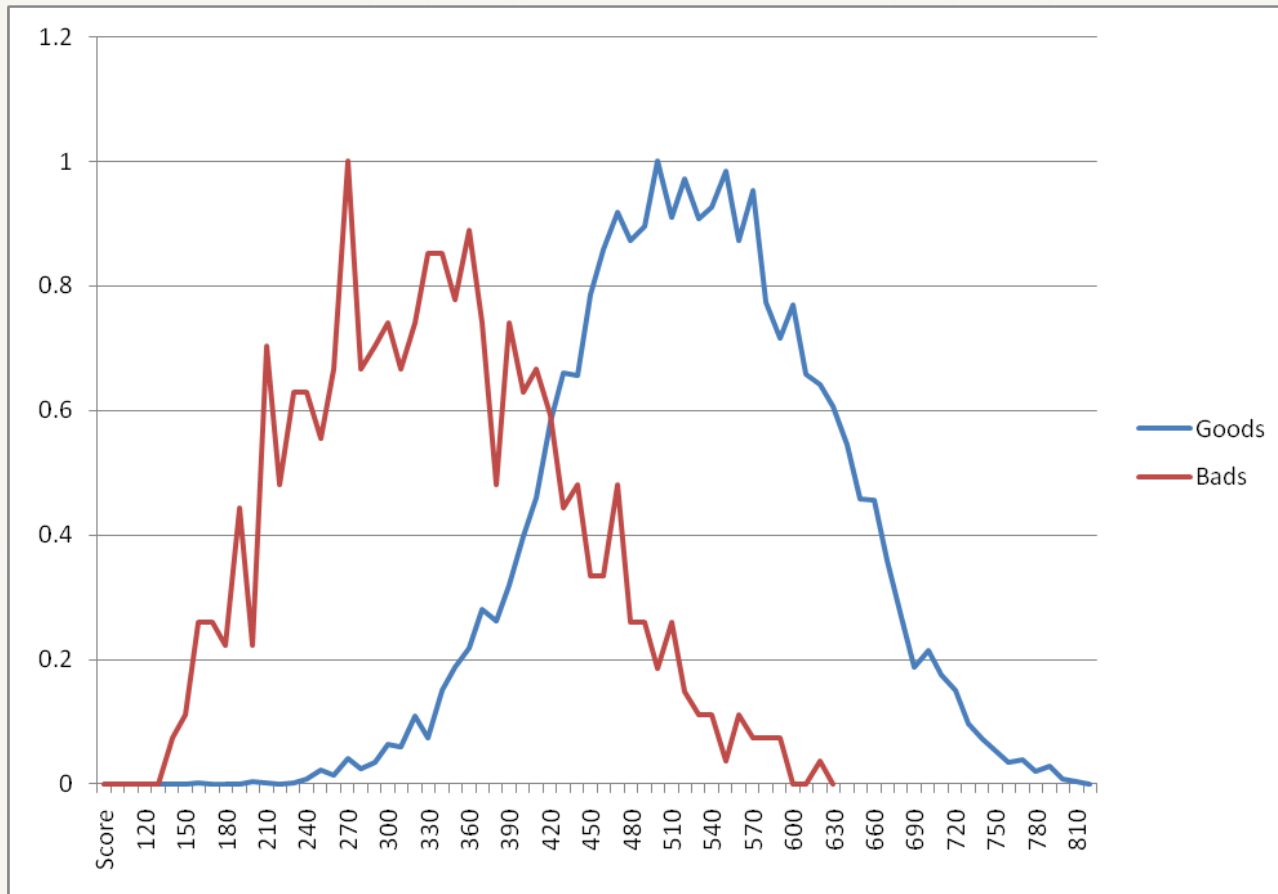


$$S(x_i) = \sum_{i=1}^m p_i * x_{ji}$$

Calculated score is a weighted sum of inputs.

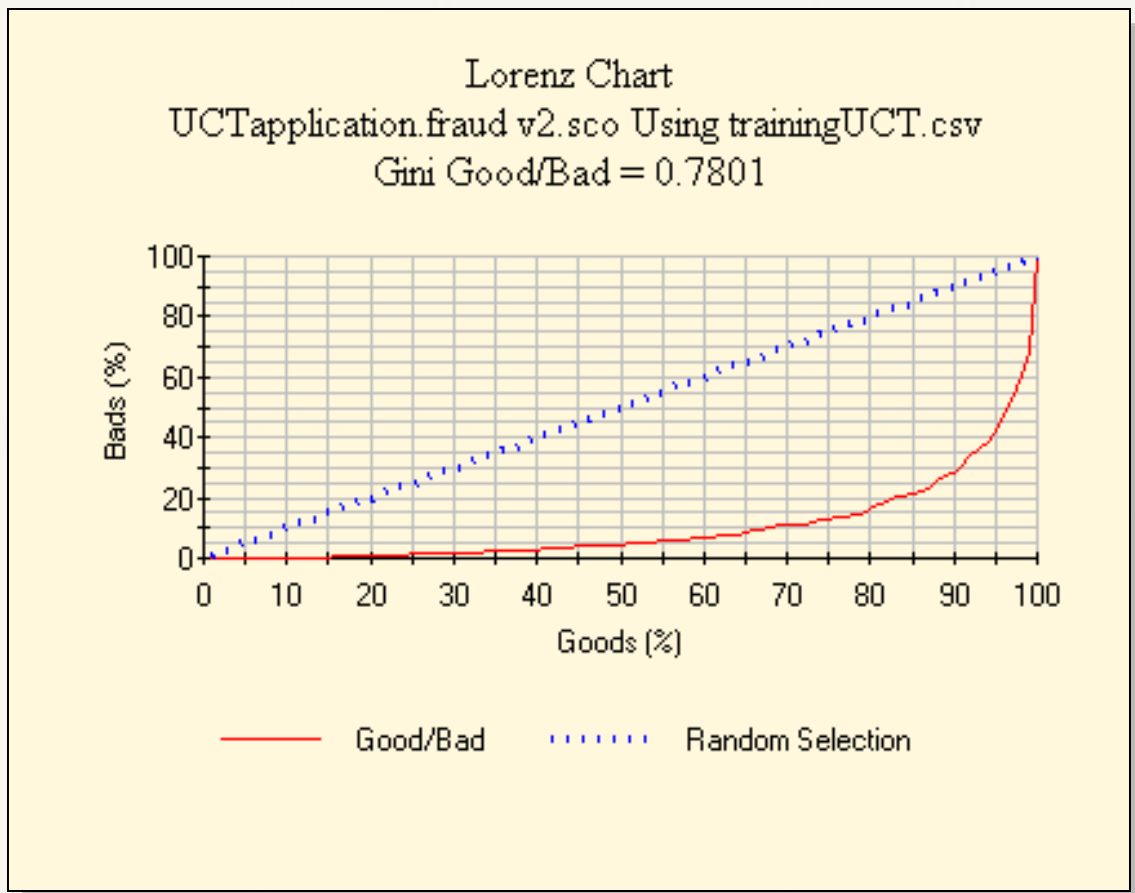


Representation of GOOD and BAD subjects on discreet intervals of scoring



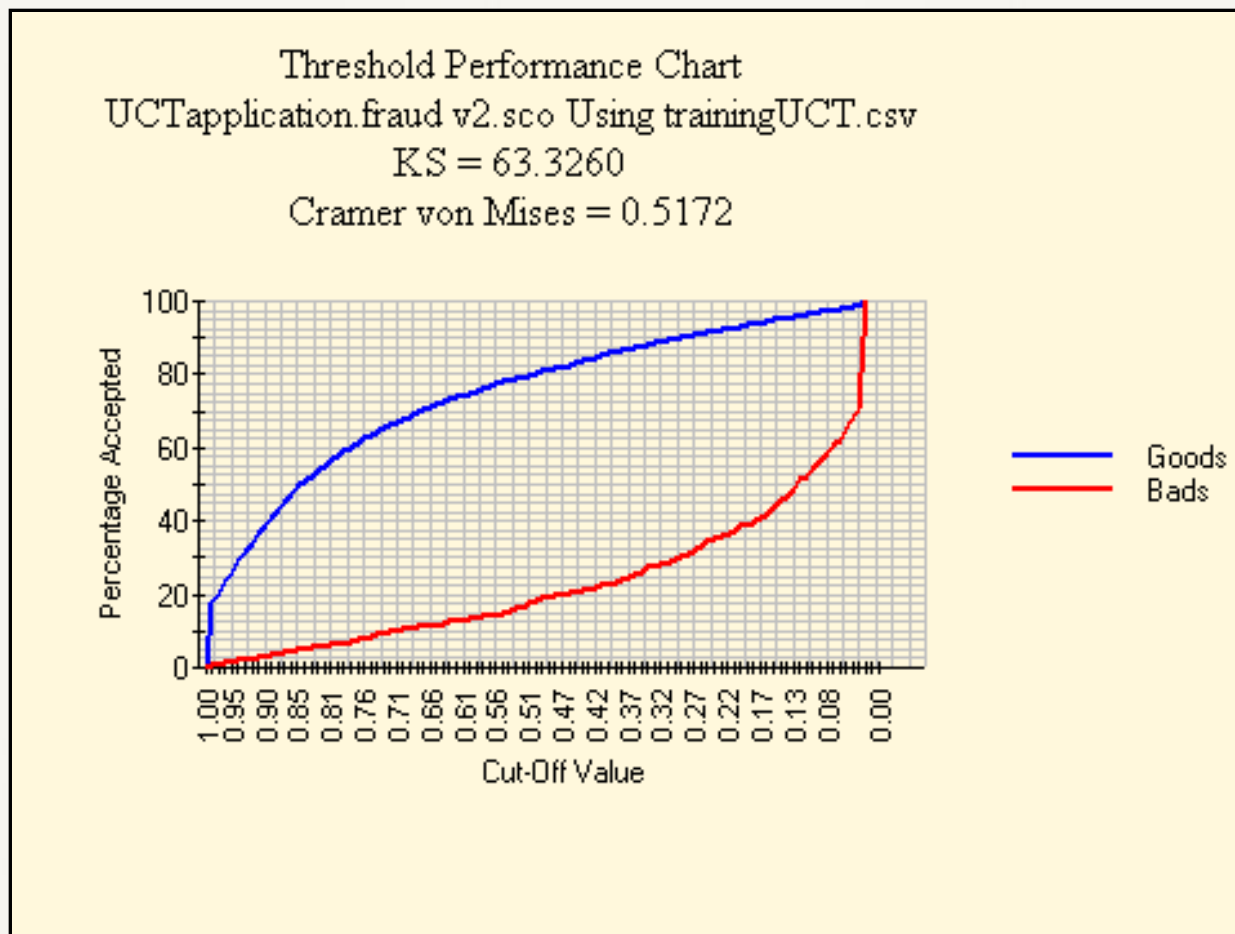


Gini coefficient



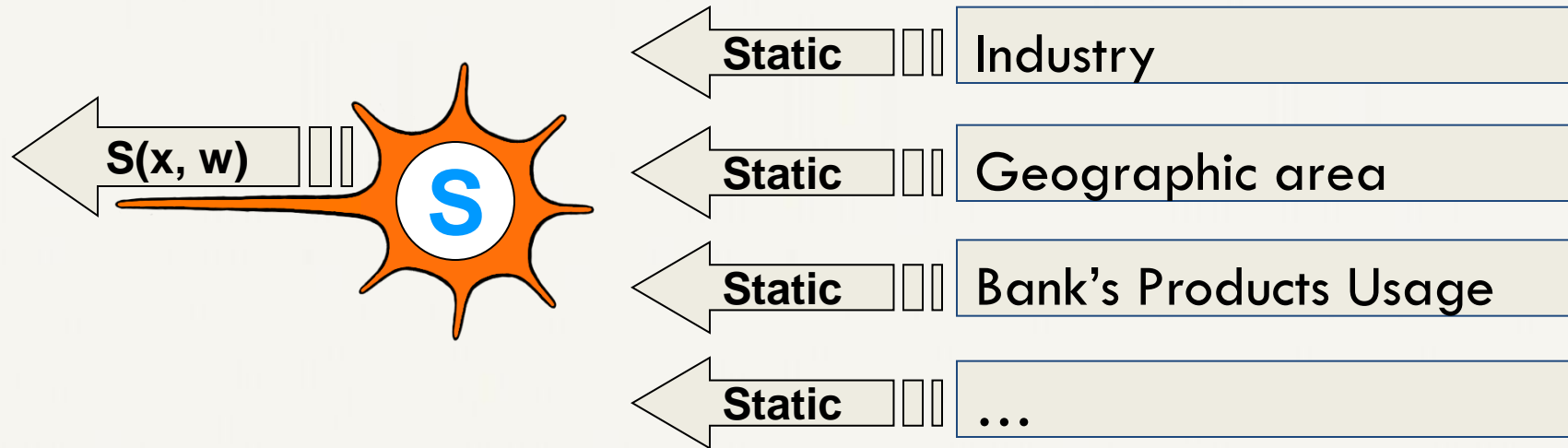


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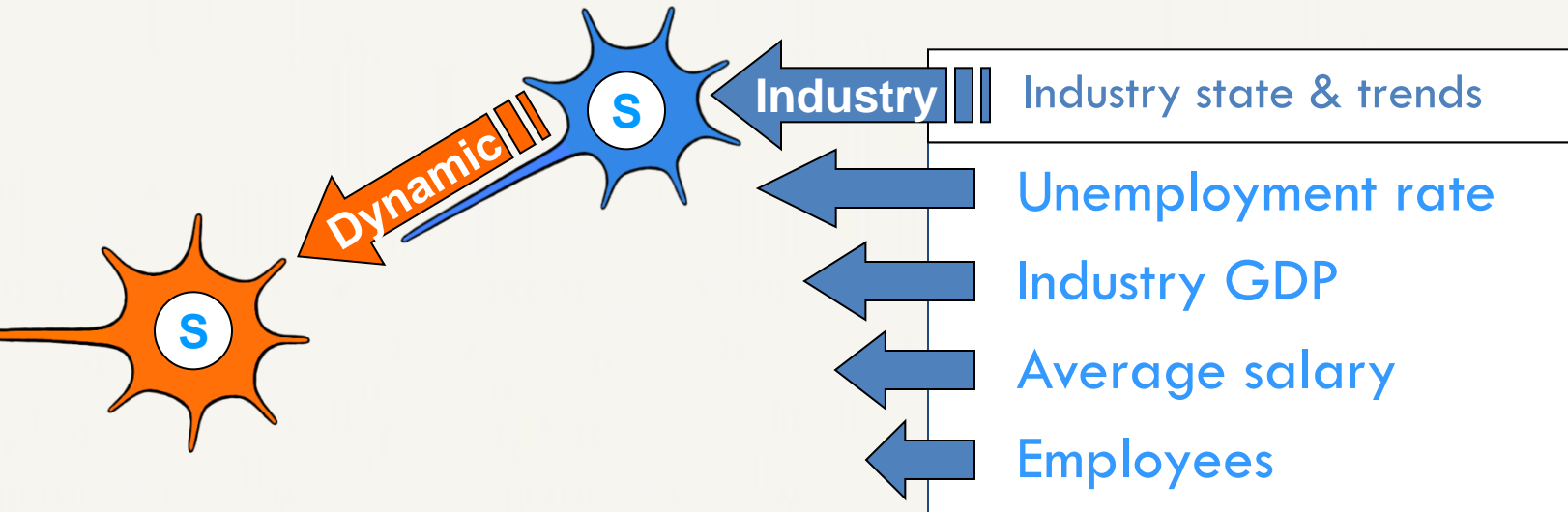
II. Dynamic risk modeling

Scorecards are frozen in time.

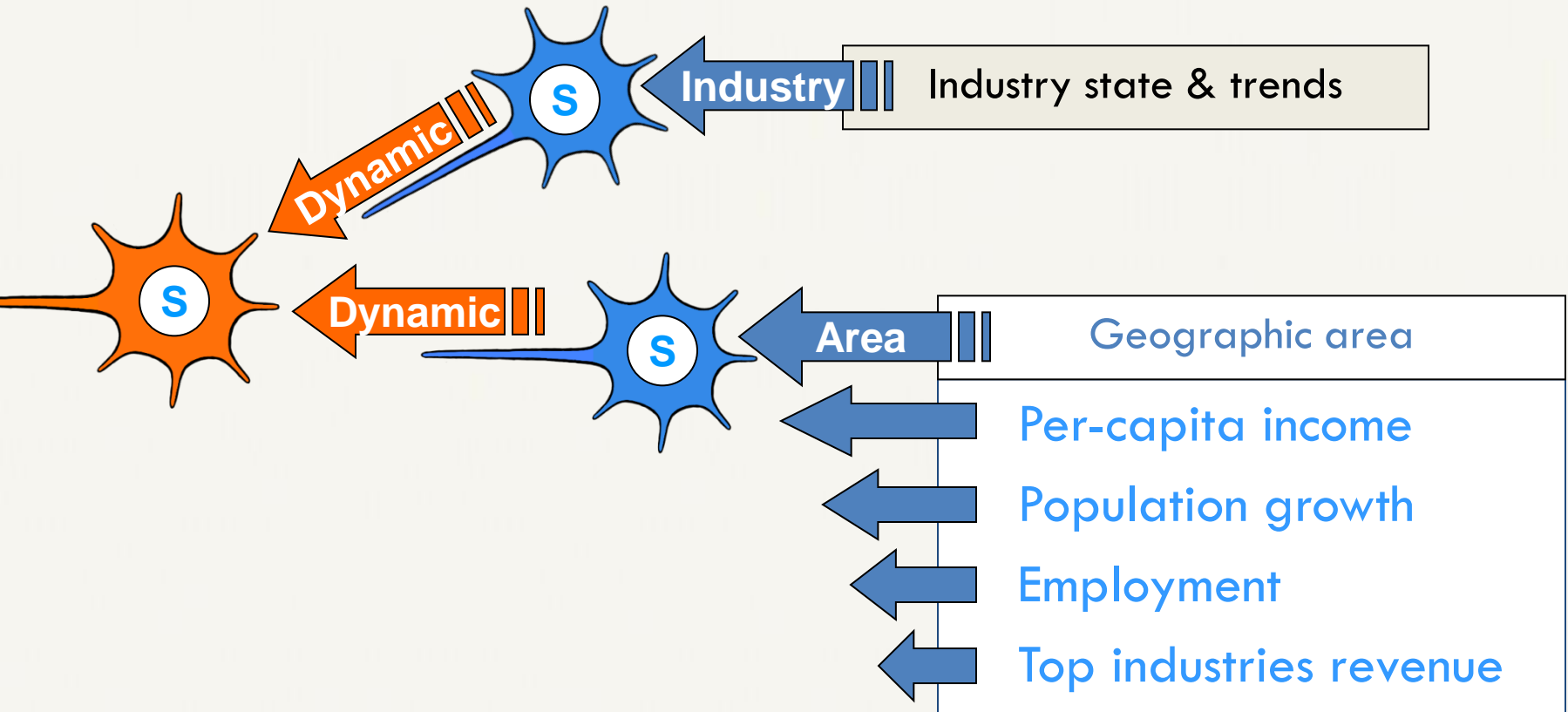


- Add time and macroeconomic variables to obtain dynamic inputs.
- Macroeconomic changes are reflected in scorecard as they happen.

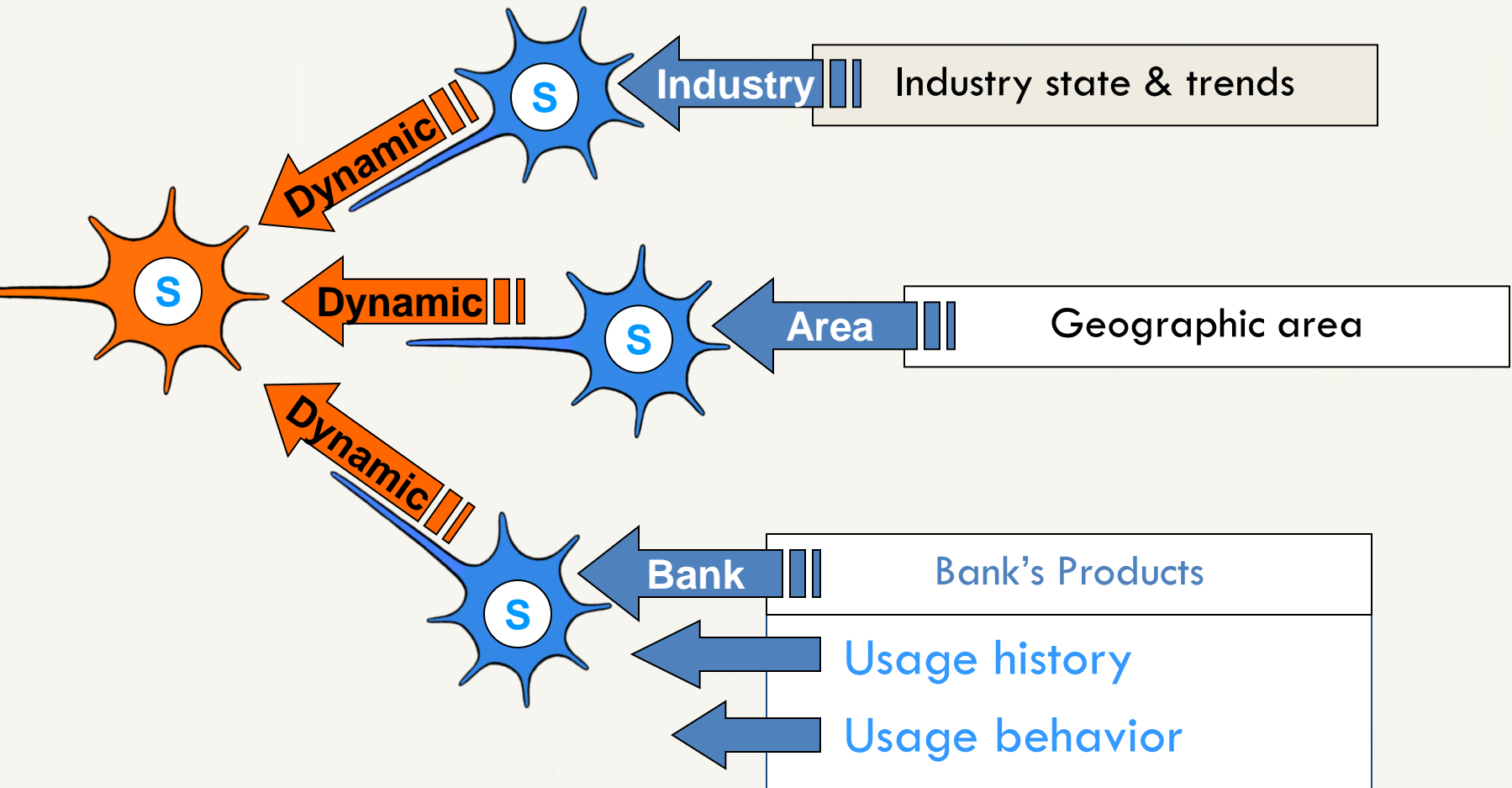
We consider macro-economic variables



We consider macro-economic variables



We consider macro-economic variables



Neural networks as adapting software

- During training, establish a predicted-accuracy.
- In “live”, monitor real-accuracy vs. predicted-accuracy.
- When the known model does not longer match the reality, then the system needs to learn the new rules.

Computer “Intuition”

- Neural system analyze portfolio in space and time under the influence of macroeconomic variables and warn on changes.
- Early identification of clients turning “bad”.
- Sell them before they become “bad”.

III. Ingenio proposal



- Ingenio automates retail lending processes in 4 top banks in Romania
- Our clients: over 50% market share, 10 billion Euros in loans



Fraud recognition: 90%

Tens of projects:

- Application fraud
- Online banking fraud
- Transactional fraud
- Recovery & collection scoring
- Credit risk scoring
- Election profiles (100%)

Specific neural scorecard in **2 weeks**:

1. Provide sample database
2. Validate database consistency
3. Deliver specific scorecard



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Thank you!

Rodica Pavaloaia – CEO

+40744.509.506

rodicapavaloaia@ucs.ro

Iuliana Maria – Risk manager

+40740.102.002

iulianamaria@ucs.ro

Ingenio Software

3 Gh. Sontu, Bucharest

Tel: +4021.407.8100

Fax: +4021.260.0890

E-mail: office@ingenio.ro