Al, what's hype, what's real, and what can be implemented today?

By Vian Chinner, 14 March 2019





This is the global headquarters of the dominant player in a \$15 billion industry.





This is their top product. They are estimated to sell \$2 billion of these per year.



People who watched GoT on a Sunday are the largest purchasers of Doc Johnson "toys" on a Monday.





Xineoh's Algorithm figured this out without ever having observed a customer who viewed GoT purchasing a "toy."

In an 18 month period, this correlation generated almost \$1m in sales via Xineoh's traffic acquisition.





What is AI, Machine Learning, Deep Learning, etc.?

What is AI, Machine Learning and Neural Networks?



Neural Nets, DeepNets and unstructured data

✓ You can explain Neural Nets by mapping words onto documents using 16 shades of grey.

Unstructured data

Doc 8	Air, Defense, Environmental, Pollution			
Doc 15	Amnesty, Illegal, Immigration			
Doc 14	Aliens, Amnesty, Illegal			
Doc 0	Defense, Illegal, Nuclear, Treaty, Power			







Neural Nets, DeepNets and unstructured data

✓ These mapping (vectors) can be used by a computer to answer symbolic questions.



Neural Nets, DeepNets and unstructured data



IBM Watson Jeopardy Question: "You are just stiff! You don't have this mosquitoborne illness with a Swahili name."

Answer: Dengue Fever





The hype?

Good hype vs bad hype

Туре	Definition	Economic Value	Data Hunger
I/O Networks (Supervised)	Input/Output Networks such as input = height and weight and output – male or not-male.	99% of all AI economic value.	Large
Transfer Learning	Utilises learning from another problem in a second problem.	Some use cases.	Larger
Unsupervised Learning	Has inputs, but no outputs. Used to find possible underlying structure.	Fewer use cases.	Enormous
Reinforcement Learning	Optimises actions toward achieving a specific goal. An example is calculating best move to win at chess.	I know of one.	Ginormous



I/O (supervised) Learning

"Any action or series of actions that can be done by a person in under 1 second can be automated by I/O networks." Andrew Ng



Data





Al and its place in the organisation

The Internet Flywheel





Key characteristics of an internet company:

- ✓ Quick iteration is possible.
- ✓ AB testing key organisational process.
- ✓ Flat structure. Important decisions are made by PMs and Engineers.



The AI Flywheel





The AI Flywheel







The AI driven organisation



Key characteristics of an AI company:

- ✓ A central data repository.
- $\checkmark\,$ A central API to control access to the data.
- $\checkmark\,$ A central algorithm to vectorize all data.
- Central predictions and inference from vectors.
- ✓ Strategic acquisition of data.





The Al-driven organisation





Selected examples

Who is Xineoh?

- Xineoh is about predicting consumer behaviour with AI.
- We help businesses out-predict their competition by unleashing the power of AI to help them maximise business efficiency and customer satisfaction.
- We do this by providing a platform to use raw transaction data to match:



People with Products



Inventory with Business Opportunities



Prices with Spending Propensity



People with Usage Patterns



Xineoh's accuracy: who buys what?

✓ We give much more accurate results at a much lower popularity bias.



MovieLens Data Set Prediction Results:

Why prediction accuracy matters – a media client

✓ For a very large media client, our platform showed that the effective saving on reduced inventory could be R1.85 billion/year.



Xineoh's accuracy: what quantity at what price?

Xineoh					
	Week 1	Week 2	Week 3	Week 4	Overall
Weeks 1-17	33.37	48.32	51.10	53.61	46.60
Weeks 18-35	36.62	52.34	55.21	56.84	50.25
Weeks 36-52	37.21	52.31	54.22	57.40	50.29
Average	35.73	50.99	53.51	55.95	49.05

Boosted Cubist					
	Week 1	Week 2	Week 3	Week 4	Overall
Weeks 1-17	41.54	58.14	63.52	64.31	56.88
Weeks 18-35	40.46	58.44	67.72	70.89	59.38
Weeks 36-52	39.50	59.72	68.18	67.82	58.81
Average	40.50	58.77	66.47	67.68	58.35

Arima					
	Week 1	Week 2	Week 3	Week 4	Overall
Weeks 1-17	55.25	87.21	103.54	92.61	84.65
Weeks 18-35	57.04	87.07	107.67	97.12	87.23
Weeks 36-52	63.20	81.82	111.82	102.41	89.81
Average	58.50	85.37	107.68	97.38	87.23



aMAPE:

What quantity at what price?



SKU: 303234-1 Product Segment: 5

Home / Demand Curves / <u>303234-1</u>

Arena Visor (HW021)

Settings:

Curve Inferrence Period: 1 Sep 2018 - 30 Sep 2018 ✓





What quantity at what price – an outlier?



SKU: 302809-1 Product Segment: 20

Home / Demand Curves / <u>302809-1</u> Barron Defender Safety Boot (SF001)

Settings:

Curve Inferrence Period: 1 Sep 2018 - 30 Sep 2018 ✔





Xineoh Solutions





What are the advantages of using Xineoh?



We massively outperform other off-the-shelf platforms in terms of accuracy.



Speed of implementation

Our solutions can be implemented in as little as two weeks while competitors like Watson take months.

A significant cost in implementing an AI solution is the amount of labour used. Since it takes only two weeks, it can be delivered much cheaper than competitors. Our solution can instantly scale to billions of queries. Free or cheap AI solutions do not have this capacity.

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