Explainable AI

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What we do in AIML team …

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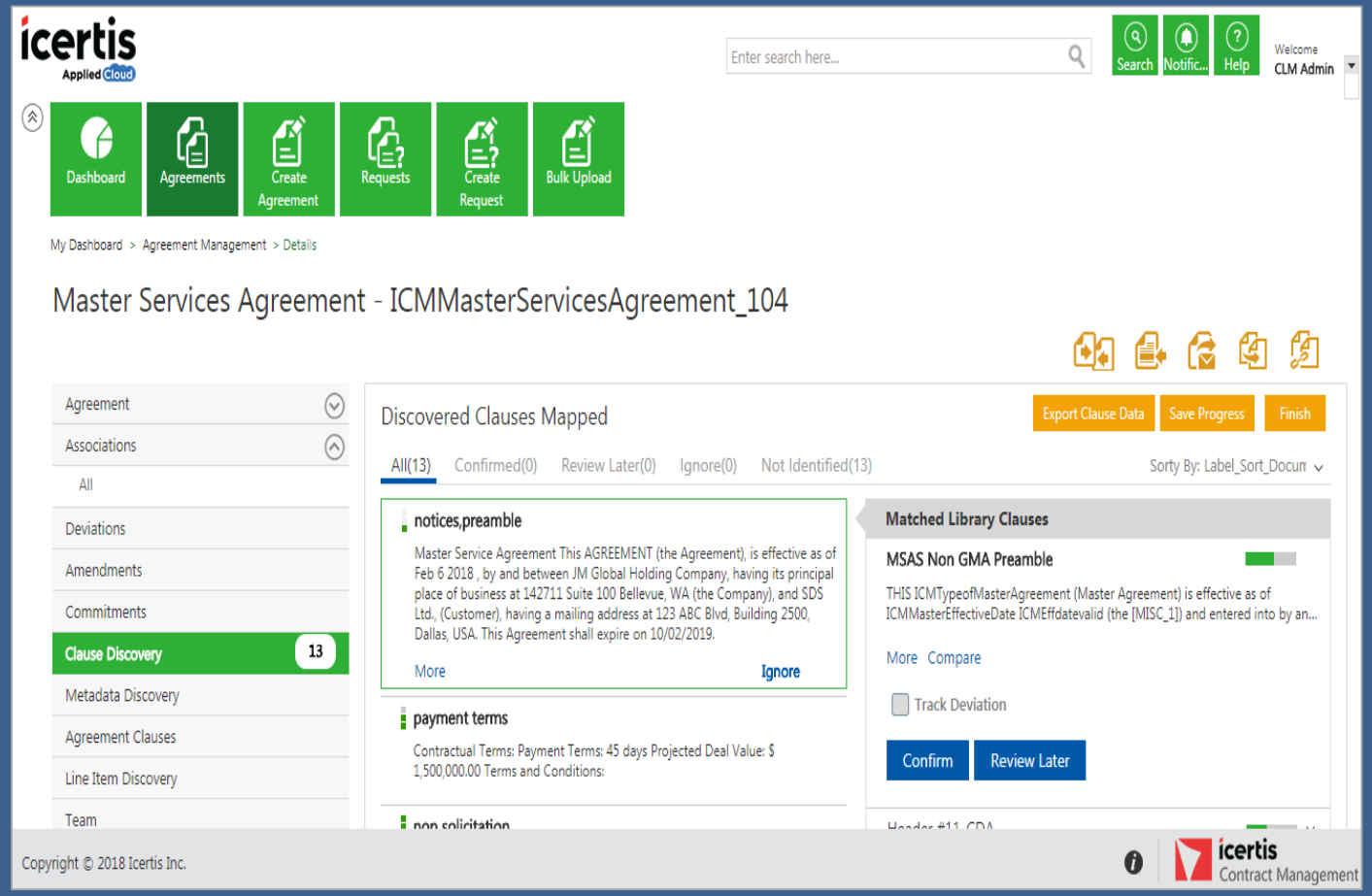
ICM DiscoverAI App

AI Powered NLP & Semantics Driven Clause Discovery, Deviations and Verifications

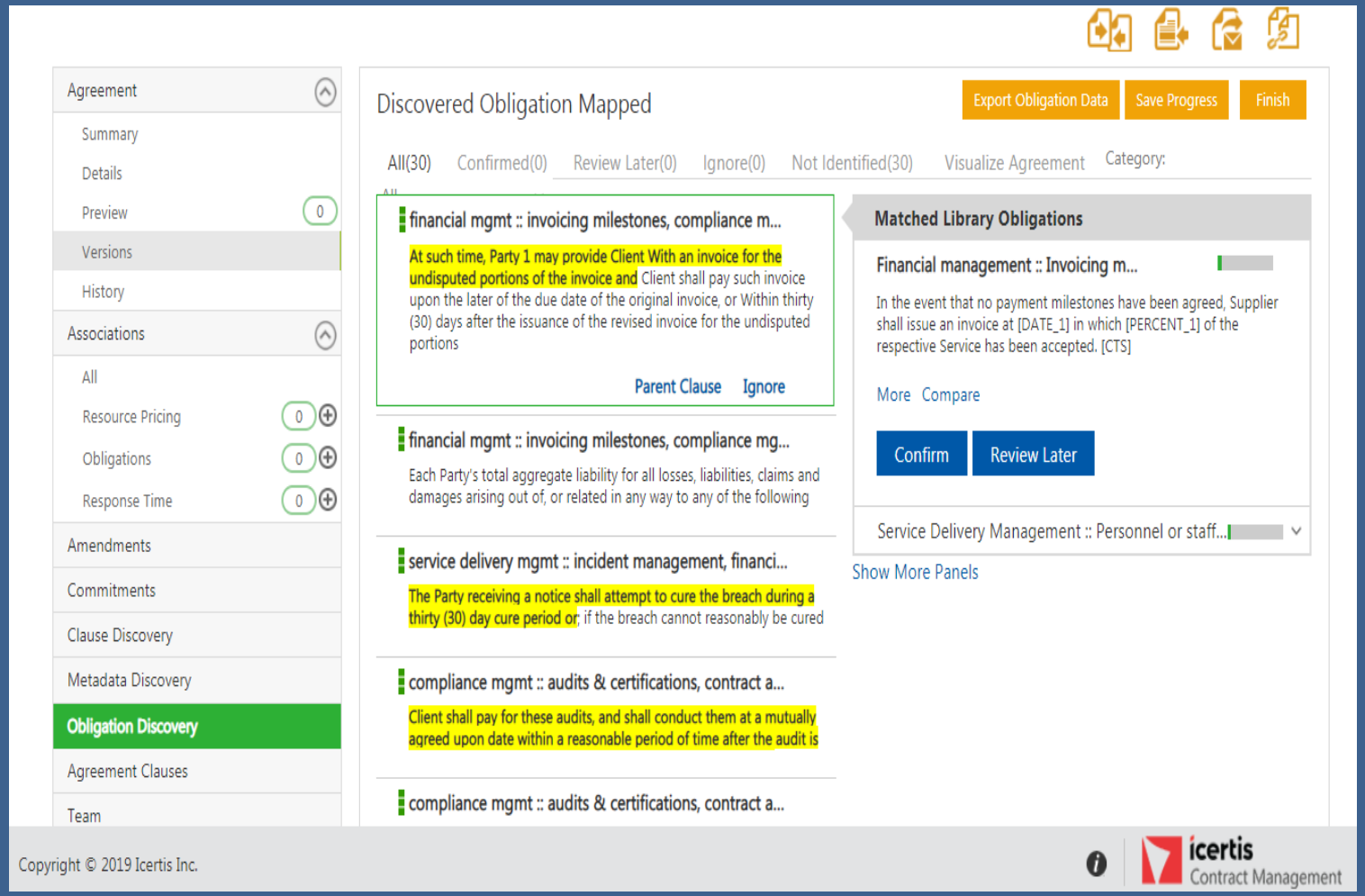


Powerful capabilities:

- Image/PDF Conversion
- Clause and Attribute Discovery
- Accurate Clause Matching
- Deviation Tracking
- Attribute Verification
- Driven by NLP & Machine Learning

ICM Obligation Management (AI Powered) App

AI Powered Obligations discovery and insights into your contracts

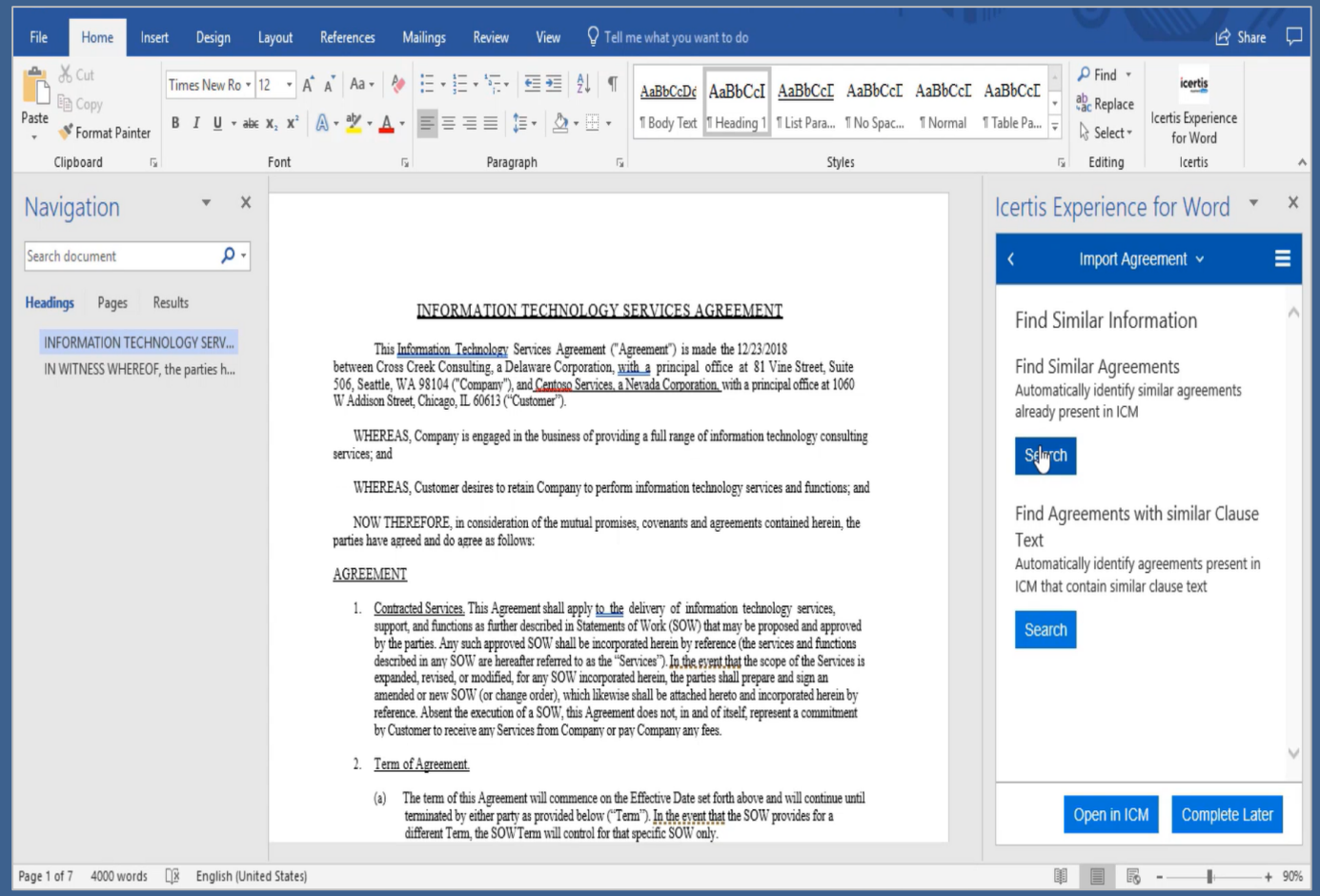


Powerful capabilities:

- Easy Obligation Management
- Extract obligations & Categorize them with Customer Taxonomy
- Extract key meta data from discovered obligations, automatically
- Automate obligations assignment to both internal and external users
- Take direct action based on intelligent insights
- Reduced risks by complying with contractual obligations

ICM NegotiateAI App

AI-powered insights to optimize contract negotiation, reduce risk, and negotiate better outcomes

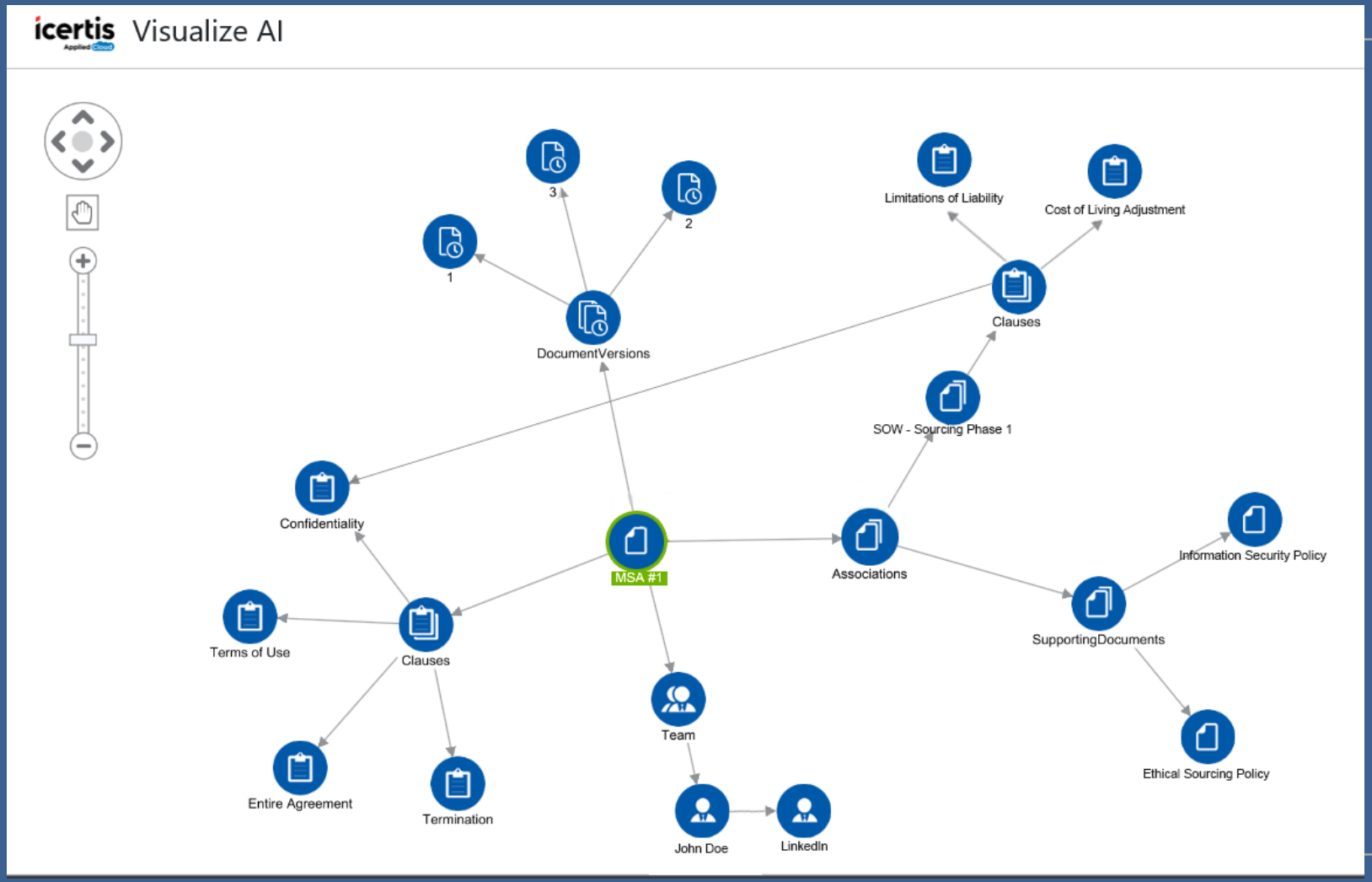


Powerful capabilities:

- Automated contract discovery
- NLP & Semantics powered extractions
- Finds similar contract and clauses
- Highlight clause deviations to ensure compliance
- Powerful AI-infused negotiations
- Familiar Microsoft Experiences
- Efficient Business Outcomes

ICM VisualizeAI App

Visualize complex contract structures, relationships and connections



Powerful capabilities:

- Unified view of Contracting Across the Organization
- Auto discover dependencies, structures associations & relationships
- Unlock hidden contract insights, connections and get contextual views
- Link to external data sources
- Unprecedented insights into your entire contract portfolio
- Take direct actions based on such intelligent insights

Overall Data Flow of Discover/Digitize AI

A Sample Digitization Project …

Number of Contracts to be Digitized : **60K**

Number of Clauses to be discovered : **32 (“Term”, “Warranty”, …)**

Number of Attributes to be discovered: **12 (“Effective Date”, “Contract Value”,…)**

Time : **3 months**

Steps …

Build AI Engine using annotated samples to extract attributes

Show results of training to the Customer and get approval

Start extractions (production) for all the contracts, in batches …

Halfway through the production …

A sample dialog

Customer: The extractions are looking ok, but…

AIML team: But??

Customer: Why are you digitizing these ‘DELLA’ contracts?

AIML team: Meaning?

Customer: You should not digitize contracts having ‘DELLA Corporation’ in the footer.

AIML team: But you never told us. No mention of any such rules in SOW also..

Customer: We are just asking you to NOT process these, not adding to your work/scope!!

AIML team: But….

Customer: Shouldn’t be difficult, right? ***AI will find out***…

(we keep hearing…)

AI **will** find out!!

(sometimes…)

AI **should** find out!!

(what if…)

AI **can not** find out!!

(and worse if …)

AI **finds it and finds it wrongly**!!

(bottom line… we need to understand that)

AI **is not Magic**!!

(But still, you need to explain me)

Why AI gave this result!!

(that's)

Explainable AI

Need for Explainable AI

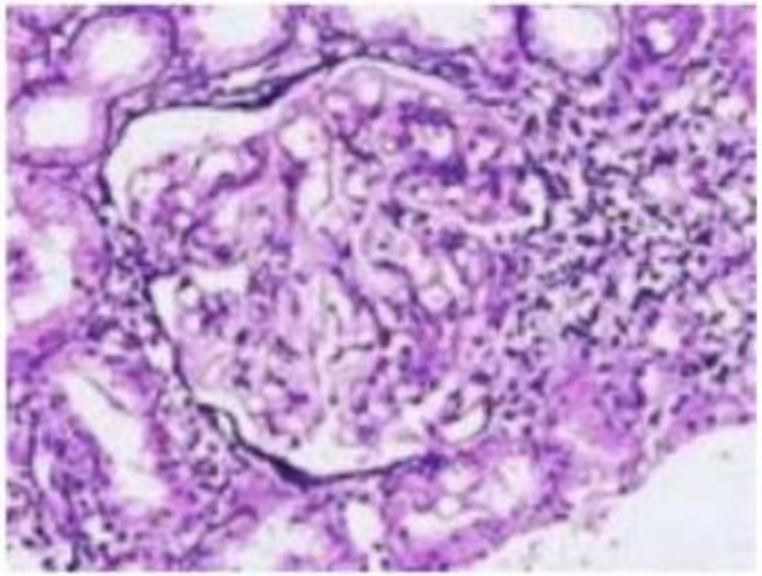
Explainable AI is essential for customers to understand and trust the decisions by AI.

(Explainable AI in Industry, KDD 2019 Tutorial,Sahin Cem Geyik, Krishnaram Kenthapadi & Varun Mithal)

Wrong decisions: Costly and dangerous

"Autonomous car crashes, because it wrongly recognizes …"

"AI medical diagnosis system misclassifies patient's disease …"



(Credit: Samek, Binder, Tutorial on Interpretable ML, MICCAI'18)

AI missed!!

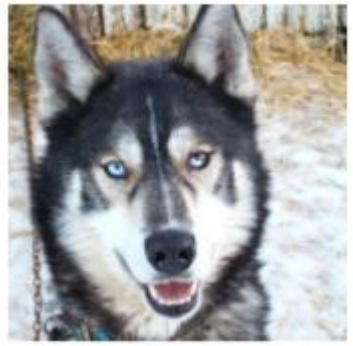
Dog vs Wolf classifier

Instead of animal body features it started detecting based on ‘presence of snow’.

So Siberian Husky (a dog) got classified as Wolf.

Training data of wolves was with snow landscapes.

http://innovation.uci.edu/2017/08/husky-or-wolf-using-a-black-box-learning-model-to-avoid-adoption-errors/



(a) Husky classified as wolf

(b) Explanation

Figure 11: Raw data and explanation of a bad model’s prediction in the “Husky vs Wolf” task.

	Before	After
Trusted the bad model	10 out of 27	3 out of 27
Snow as a potential feature	12 out of 27	25 out of 27

Table 2: “Husky vs Wolf” experiment results.

-- “AI can make decisions better, but Can it make better decisions”--

AI as Black Box

Why did the AI system do that?

Why didn’t the AI system do something else?

When did the AI system succeed?

When did the AI system fail?

When does the AI system give enough confidence in the decision that you can trust it?

How can the AI system correct an error?

Explainable AI (XAI) – A Perspective, Saurabh Kaushik

Explainable AI

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Three Key Pillars of Explainable AI

Reasonable AI: The ability to understand the reasoning behind each individual prediction

Traceable AI: The ability to trace prediction process from algorithm to data.

Understandable AI: The ability to fully understand the AI decision-making is based

“Right to Explanation” – GDPR

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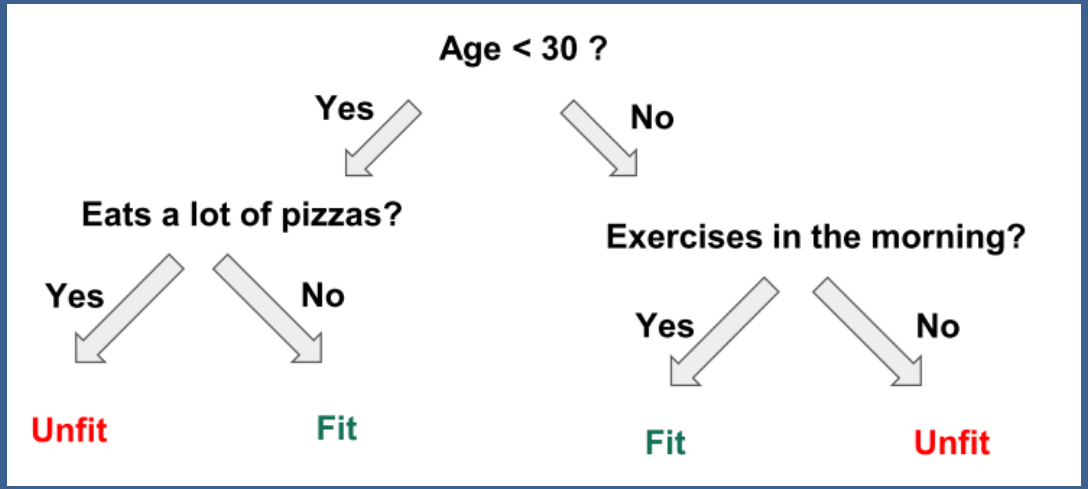
Achieving Explainable AI

Prediction explanations

- Important features
- Features weights
- Decision tree plotting

Build an interpretable model using libraries like LIME, SHAP, etc.



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“Interpretability is the degree to which a human can understand the cause of a decision.”

(Miller, Tim. 2017. “Explanation in Artificial Intelligence: Insights from the Social Sciences.”)

So, What (exactly) is AI?

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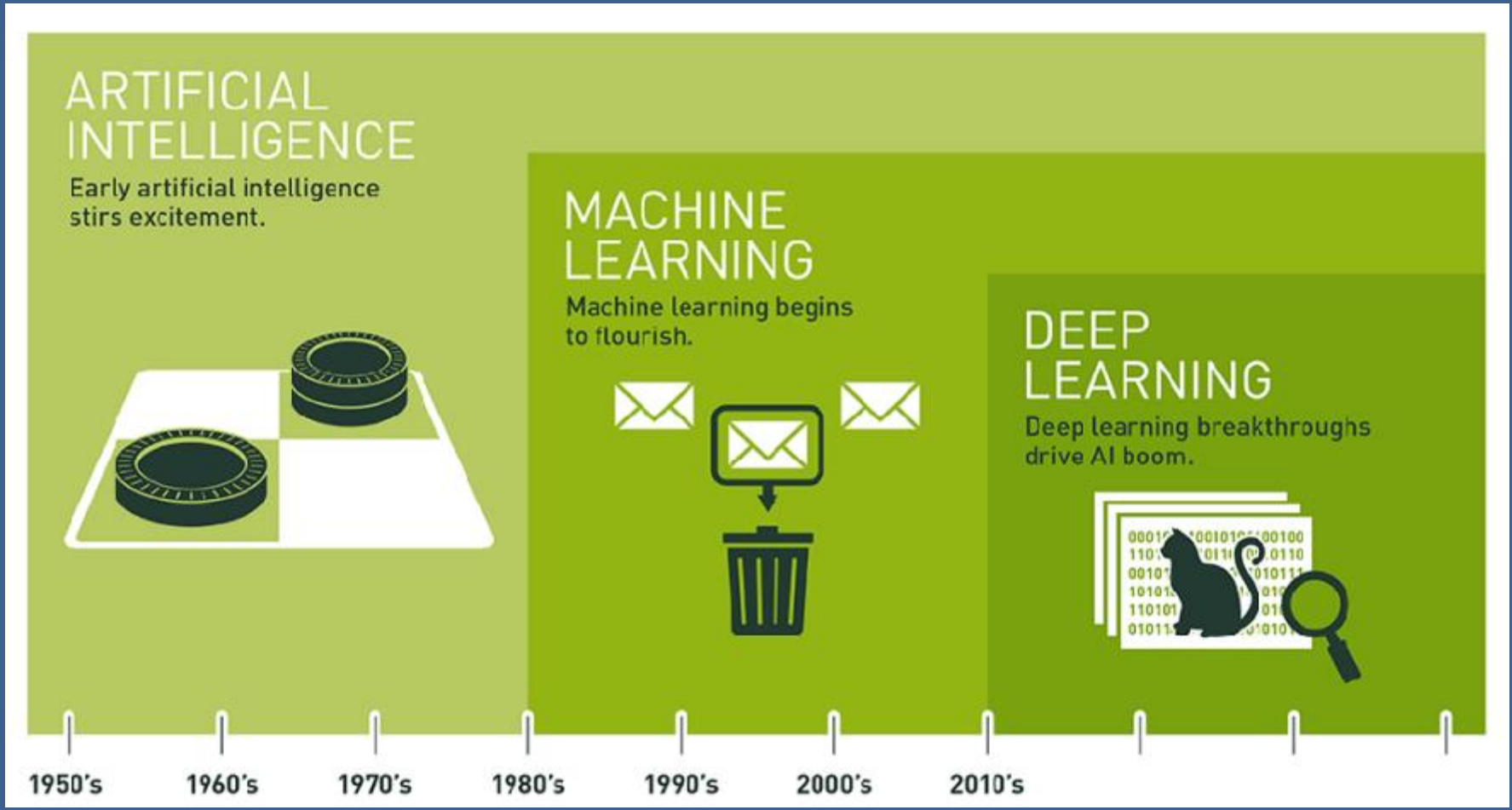
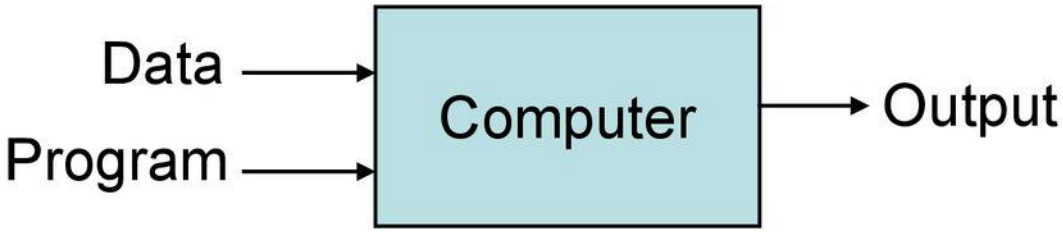
(typical understanding)

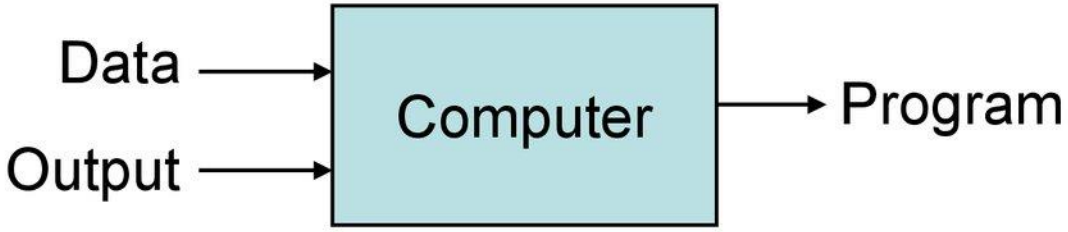
If Machines show intelligence, like Humans that's AI

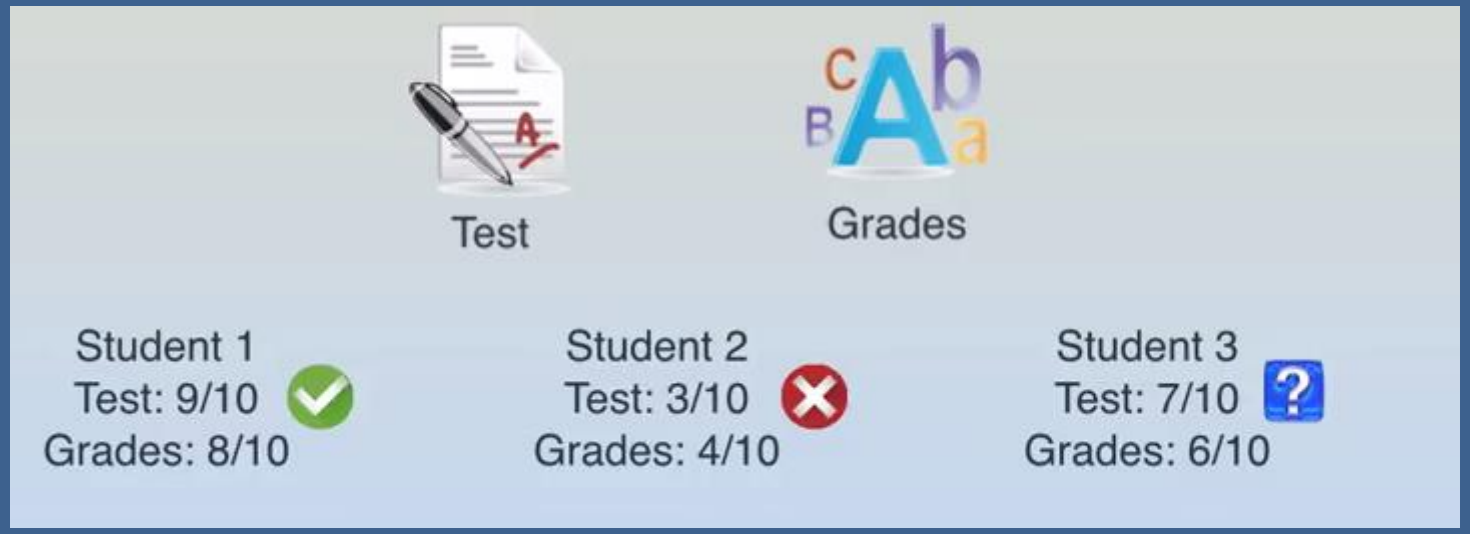


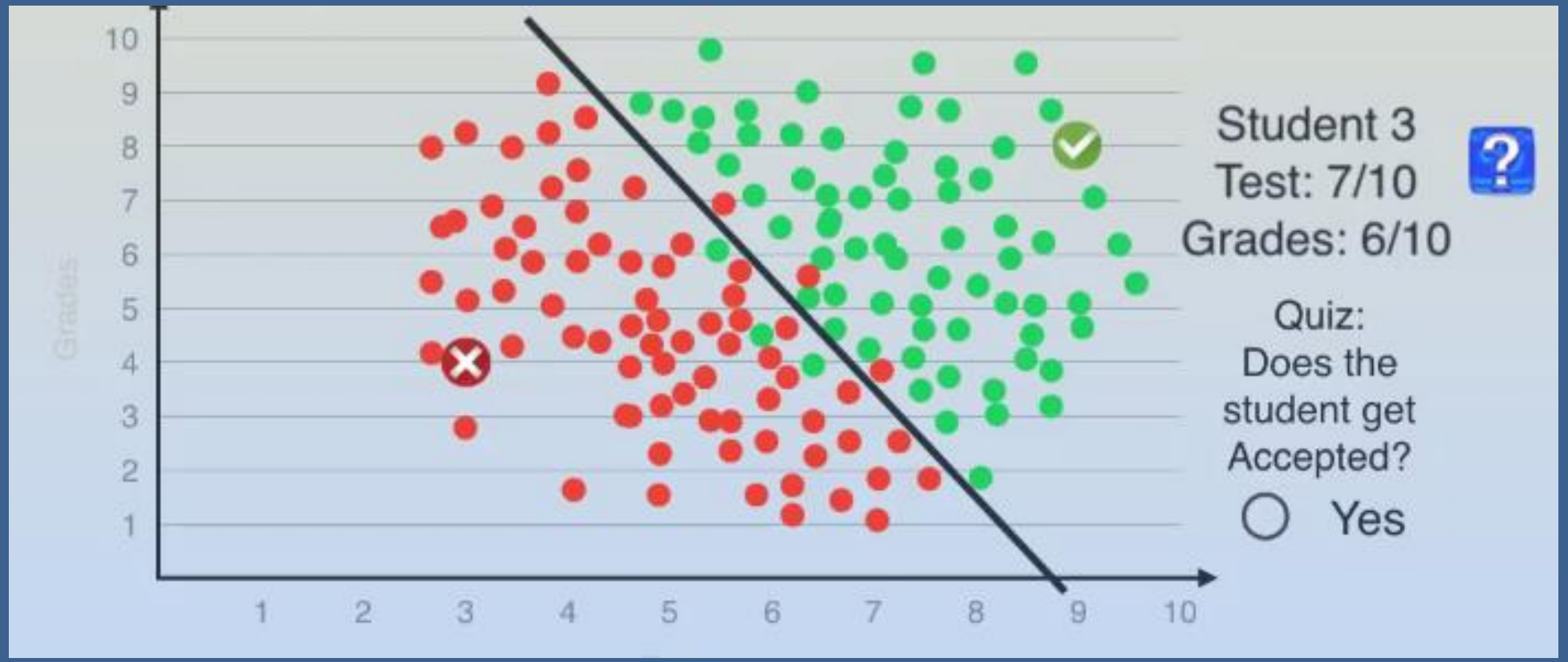
Traditional Programming

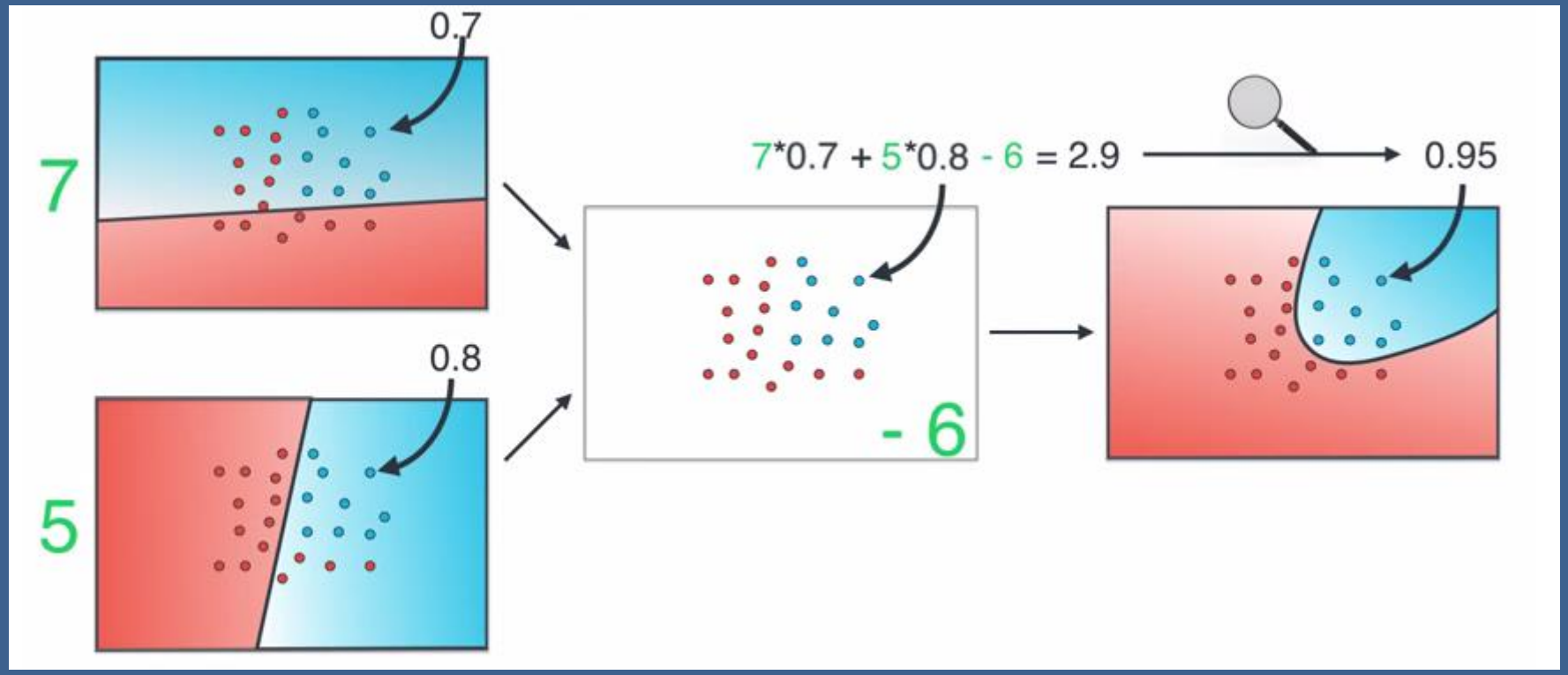


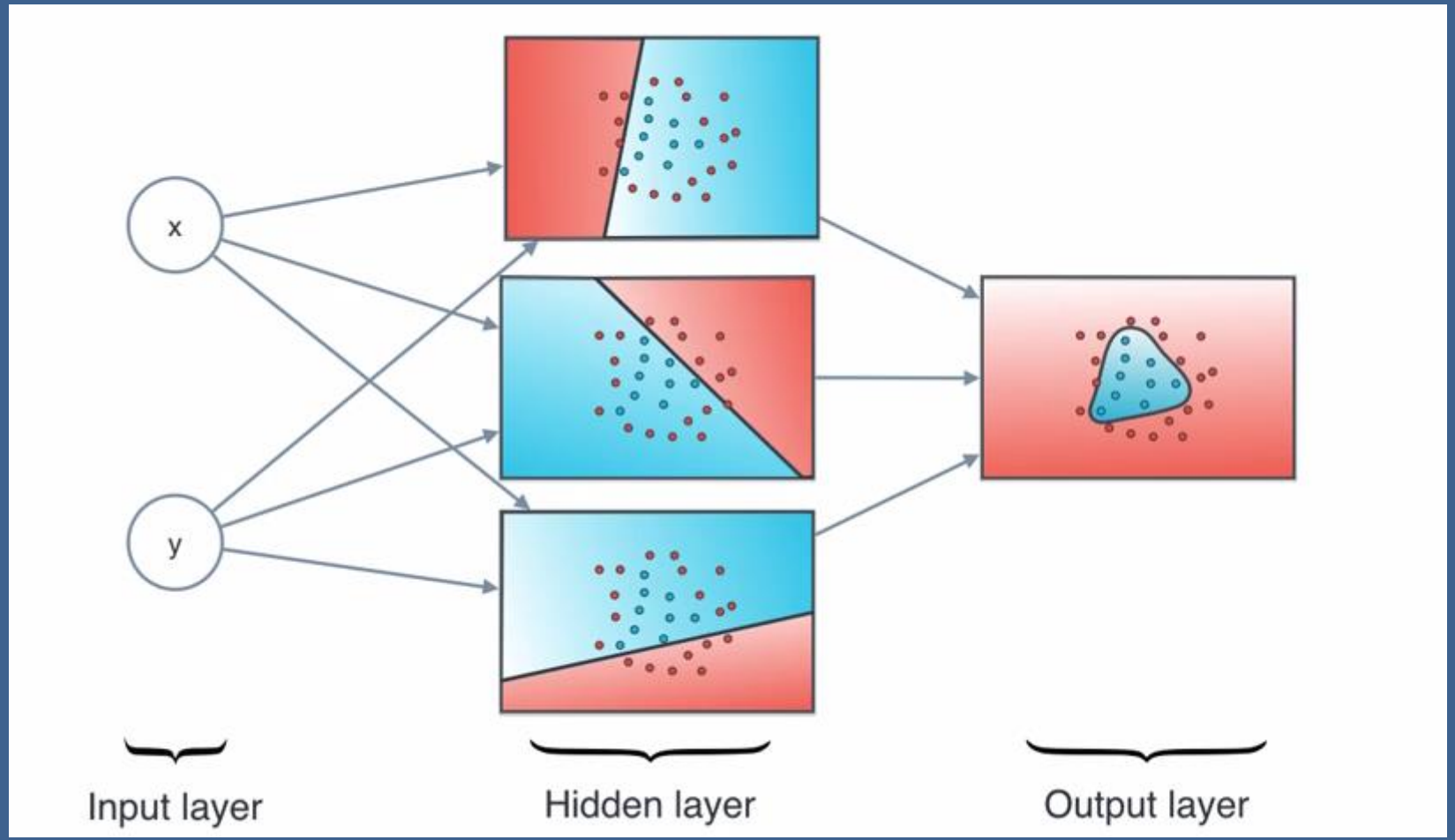
Machine Learning

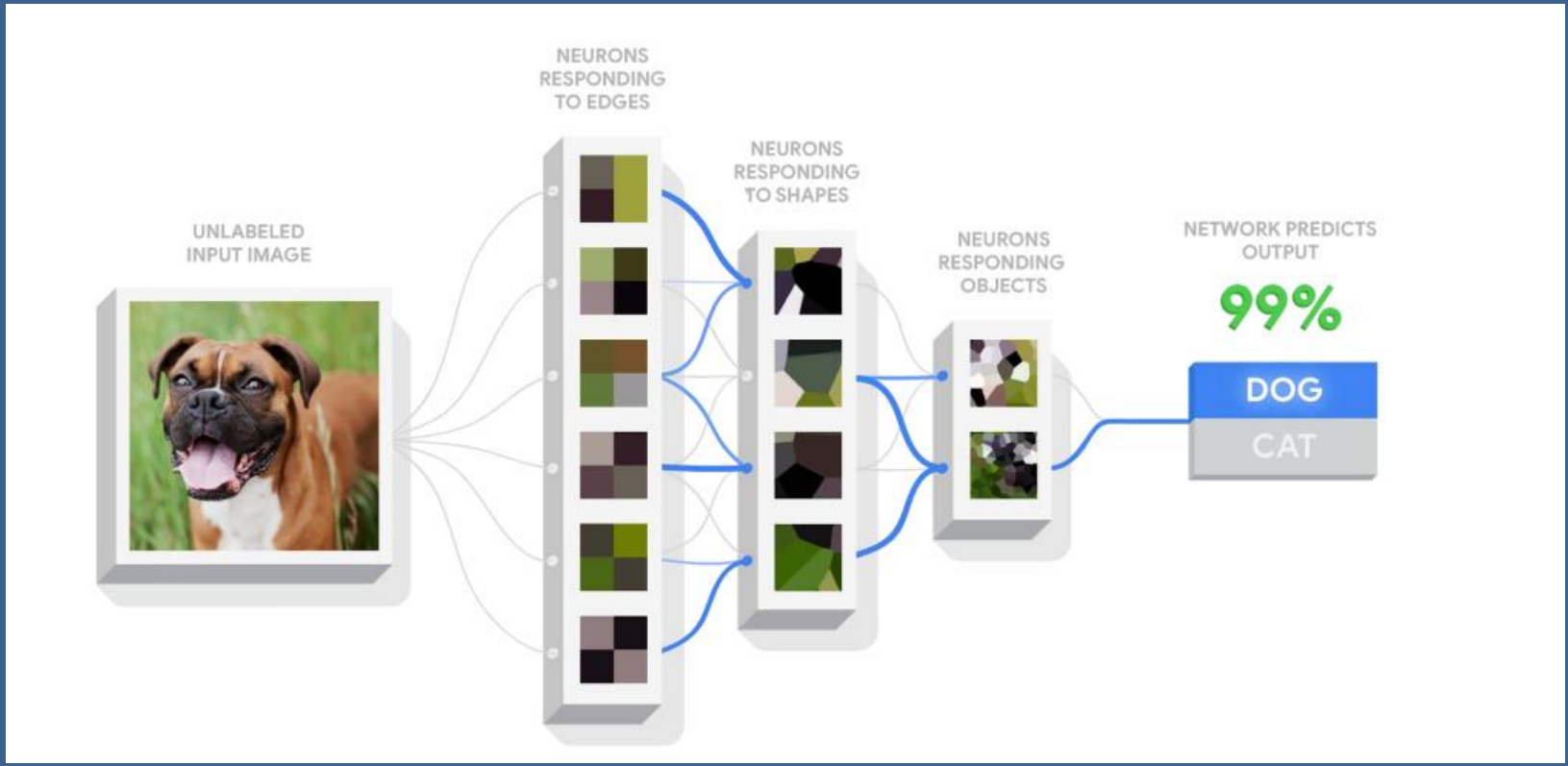




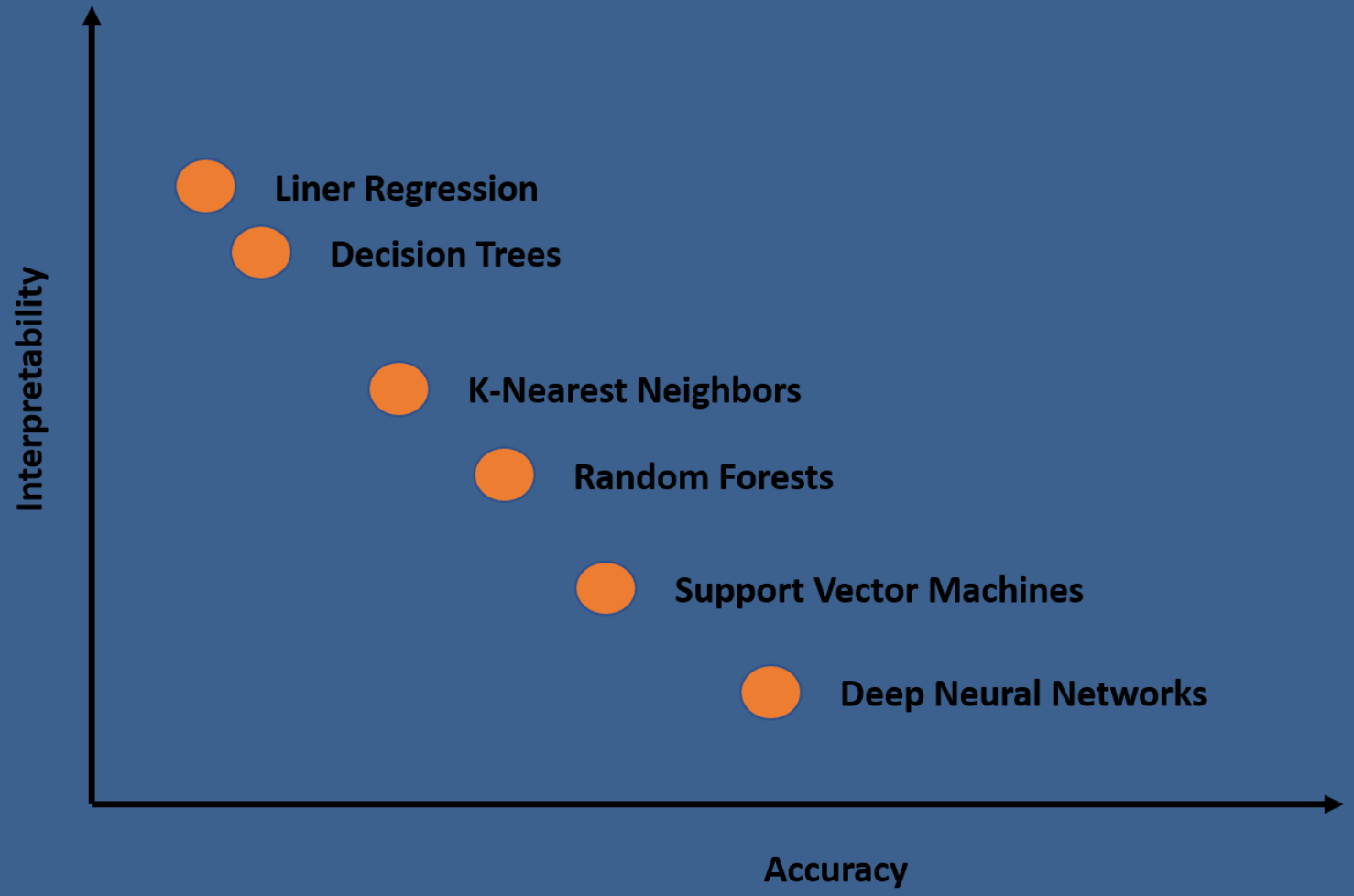








But…



(Application of artificial intelligence in gastroenterology, April 2019,World Journal of Gastroenterology 25(14):1666-1683)

Explain-ability of AI Algorithms

Regression – Multinomial Equation can be messy

Random Forrest – Multiple Tree and their Data Set and Voting

SVM – Kernel and Data Partition effect on Feature

K Mean – Nature of Centroid don’t describe cluster well.

NN – Hidden Nodes and their way of creating features

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So…Finally

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AI is just a set of algorithms, which (predominantly) work given Inputs **as well as Outputs**

For example: to find out clause “Term”…

Need to supply AI algorithm with 100s/1000s of “Term” clause samples

Gets trained on patterns, word frequencies, context words

Stores this information as ‘model’

Can be used to classify unseen clause, whether “Term” or not.

Quiz

If you want to find something new say “LIBOR” clause, what would be needed?

Let’s Summarize together

AI-ML-DL approaches are not deterministic (but <>?)

For good results, need good annotated data and lots of it

Annotations need to be perfect (“Gold”), else Garbage-In-<??-<??>

Data should cover all possible variations

AI-ML-DL just fits the data, just that, but, it does it automatically!!

ML has better explain-ability than DL (why?)

Btw, thoughts to ponder on…

‘AI is biased’ because of it’s training/data

‘Explainable AI’ is to understand how/why it is biased

But then…

Human are biased too…

‘Explainable Humans’… the next topic for talk? Anyone?


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