

Innovate UK Knowledge Transfer Network (Innovate UK KTN)

Dawn Geatches

18th Sept 2023

dawn.geatches@iuk.ktn-uk.org

<https://iuk.ktn-uk.org/>



Innovate UK
KTN

The Innovate UK System

Innovate UK, Innovate UK KTN & Innovate UK EDGE



Innovate UK System

Innovate UK

Innovate UK is the UK's innovation agency: a non-departmental public body operating at arm's length from the Government as part of UKRI.

Innovate UK KTN

Innovate UK KTN exists to connect innovators with new partners and new opportunities beyond their existing thinking - accelerating ambitious ideas into real-world solutions.

EDGE

Innovate UK EDGE empowers innovation-driven businesses to grow at pace and achieve their industry- and society-transforming ambitions.

Funding opportunities

Innovate UK BridgeAI

<https://iuk.ktn-uk.org/programme/bridgeai/>

bridgeai@iuk.ktn-uk.org

Dr Claire Morris (She/Her)

Innovation Lead – BridgeAI

Innovate UK

Mob: 07858 679385

Claire.morris@iuk.ukri.org



BridgeAI



BridgeAI is an Innovate UK
funded programme,
delivered by a consortium



£100m

Funding available



4

High growth
potential sectors

Agriculture
Transport
Construction
Creative Industries



The
Alan Turing
Institute

bsi.

BridgeAI

Collaborative AI Solutions to improve productivity in key sectors (2 Strands)

<https://apply-for-innovation-funding.service.gov.uk/competition/1715/overview/ad93e28e-0efc-4841-a927-6150c57b1525>

Competition opens: Wednesday 27 September 2023

Collaborative R&D



BridgeAI



Collaborative AI Solutions to improve productivity in key sectors (2 Strands)

<https://apply-for-innovation-funding.service.gov.uk/competition/1714/overview/c85b3edc-0416-4e92-a5d3-014fe8aab148>

Competition opens: Wednesday 27 September 2023

Single entity projects



Innovate
UK

BridgeAI





Innovate
UK

BridgeAI



Collaborative AI Solutions to improve productivity in key sectors

Briefing Event

29 Sept 2023, 11.00 – 12.30 | Online

[Register now](#)

General (AI) funding opportunities

<https://iuk.ktn-uk.org/opportunities/>



European Union
 Global
 International
 Local
 National
 Regional

Organisations:
All Organisation: ▾

<p>UK - Germany Bilateral: Collaborative R&D Round 2</p> <p>Opens: 04/09/2023 Closes: 06/12/2023</p> <p>UK registered organisations, with a German SME collaborator, can apply for a share of up to £4...</p> <p>More Information →</p>	<p>Innovation in Professional & Financial Services Round 2</p> <p>Opens: 01/08/2023 Closes: 27/09/2023</p> <p>UK registered businesses can apply for a share of up to £5m to develop new products and services...</p> <p>More Information →</p>	<p>Canada-UK: Biomanufacturing of Biologics and Advanced Therapies</p> <p>Opens: 26/06/2023 Closes: 17/10/2023</p> <p>UK registered organisations can apply for a share of up to £3.5m to collaborate with Canadian SMEs o...</p> <p>More Information →</p>
<p>Innovation Exchange challenge: Intelligent Surveillance</p>	<p>Innovate UK Investor Partnerships: SME round 4</p>	<p>Innovate UK Investor Partnerships: Investor Selection</p>



Innovate UK
KTN



<https://apply-for-innovation-funding.service.gov.uk/competition/1539/overview/c1be09e2-f448-4559-8a56-2ab5c5c5d090>

[< Back to all competitions](#)

Funding competition

Innovate UK Smart grants: June 2023 [\(Rolling call\)](#)

UK registered organisations can apply for a share of up to £25 million for game changing and commercially viable R&D innovations that can significantly impact the UK economy. This funding is from Innovate UK, part of UK Research and Innovation.

Competition opens: Thursday 15 June 2023

Competition closes: Wednesday 27 September 2023 11:00am

[Start new application](#)

Introducing KTP (Knowledge Transfer Partnerships) <https://www.ktp-uk.org/>



A partnership between:

- A successful, growing, UK-based **Business/ not-for-profit organisation** (including social enterprises and charities) that needs specific, innovative knowledge to make further positive impact.
- A university, college, research and technology organisation or Catapult in the UK (**A knowledge base**)
- Post/graduate (**An Associate**) who transfers and embeds the knowledge

KTP is Growing



INCREASE IN BUDGETS



AKT2 INNOVATE

KTP Project Profile

WHO

Any size, any sector including virtual UK based business & third sector

Public sector for Management KTP only

WHAT

Any subject that is innovative, business-led, strategically relevant

- Demonstrates:
- commercial impact,
 - innovation,
 - knowledge transfer,
 - embedded capability &
 - coherent plan

WHY

Delivers quantifiable benefits for all three partners

Creates economic, societal & environmental impact

KTP Project Cost - Grant Contribution

67%

SME

50%

LARGE COMPANY

75%

THIRD SECTOR

Average Total KTP Project Cost per annum:
£80-100K



InnovateUK
KTN

KTP Numbers (2021 - 2022)

Current Partnerships
753

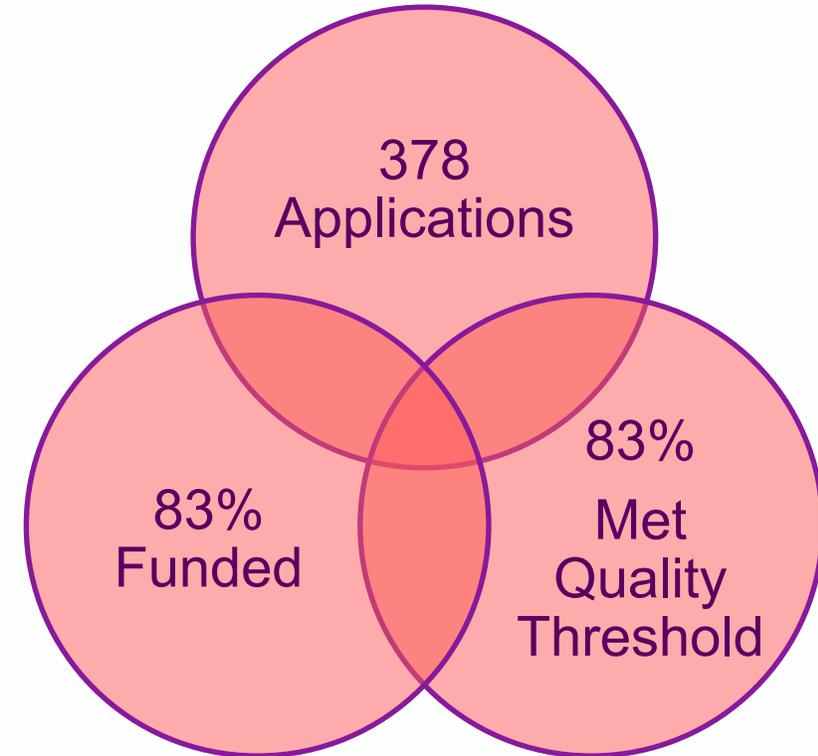
KB Partners
100

Business Partners
718

Associate Jobs
779

Current Associates
504

Associate Vacancies
275



Knowledge Transfer Adviser (KTA) Support

- A National Network of highly experienced Advisers with remit to support KTP delivery
- Locally based Expert Support and Advice throughout the project lifecycle
- Support and monitor the project
- Mentoring for KTP Associate
- Interface with other KTN resources/networks/sector specialists



<https://www.ktp-uk.org/knowledge-transfer-advisers/>



Innovate UK
KTN

**KTP
Rounds
2022/23**



[This Photo](#) by Unknown
Author is licensed under
[CC BY-NC](#)

Wednesday, 22 March 2023

Wednesday, 17 May 2023

Wednesday, 5 July 2023

Wednesday, 6 September 2023

Wednesday, 1 November 2023

Wednesday, 13 December 2023

Wednesday, 7 February 2024

Accelerated Knowledge Transfer to Innovate (AKT2I)



<https://www.ktp-uk.org/accelerated-knowledge-transfer-to-innovate-akt2i-pilot-scheme/>

- Up to £3m
- A UK Knowledge Base must work with a UK registered business, charitable company, or charity
- The maximum grant will be £35,000 per project
- The Business Partner must contribute an additional 10% (minimum) of the total project costs in cash
- Have a duration between 2 and 4 months
- End by 31 March 2023

Example of costs

Based on project costs of £38,500

The Knowledge base would receive the maximum grant of £35,000

The business would contribute an additional £3,500

*There is no upper limit to the cash contribution of the business



Innovate UK
KTN



What Next?

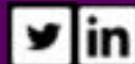
Contact your **local** Knowledge Transfer Adviser to find out more about KTP and Management KTP using the links below

KTP Website - www.ktp-uk.org

Management KTP resources – www.ktp-uk.org/mktp/

Twitter - @ktn_ktp

LinkedIn- www.linkedin.com/showcase/ktn-ktp



THANK YOU!

www.ktn-uk.org



Innovate UK
KTN

ADDITIONAL SLIDES

Examples of Study Groups

www.ktn-uk.org



Example of KTP costs

	2018	2019	2020	2021	2022
Contribution to associate employment costs	45,000	30,150	14,850	22,500	22,500
Associate development	2,000	1,340	660	1,000	1,000
Travel and subsistence	1,250	838	413	625	625
Equipment, consumables, and other costs	2,000	1,340	660	1,000	1,000
Knowledge base supervisor	8,000 for example	5,360	2,640	4,000	4,000
Estate costs	0	0	0	0	0
Additional associate support	18,000 for example	12,060	5,940	9,000	9,000
Grant payable or business contribution		51,088	25,163	38,125	38,125

KTP Costs

Cost Category	Standard Costs (per year)
Contribution to associate employment costs	£45K (£48K in London)
Associate development	£2K
Travel and subsistence	£1.25K (Standard can ask for more)
Equipment, consumables, and other costs	£2K (Standard can ask for more)
Knowledge base supervisor	Varies
Estate costs (This includes the use of existing facilities and anything chargeable within the knowledge base. Normally this will be zero as the associate is located at the business partner's premises.)	Varies
Additional associate support (These are the costs for managing the associate, such as computing, personnel admin, learning resources and secretariat support to the LMC)	Varies

**Standard KTP Budget
Approx. £100K
(per year)**

Grant rates
3rd Sector: 75%
SME: 67%
Large Companies: 50%



**InnovateUK
KTN**



**Practical lessons from
LLM application
development**

John Manslow, CTO
john@nqminds.com

The narratives



they're amazing, they know everything, they can read and write any language; you just have to tell them what you want, and they'll give it to you :-)

they'll take over the world, take our jobs and kill us all; and they're all racist, sexist and will destroy the environment :-)



Kittens or death;
"Program complete. Enter when ready." or "I'm sorry Dave..."

Internal demos

One month to explore practical potential by building internal demos

- simple chatbot
- support assistant
- sales assistant
- ai data analyst
- search augmented chatbot

Demos were intended to **cut through narrative** and understand practical utility

Search augmented chatbot

Question: Who are the founders of NquiringMinds?

Response from Google:

Nick Allott is the Founder & CEO at NquiringMinds.

[Completely missed co-founder Anita Allott]

Response from NquiringMinds :

NquiringMinds is a British AI company founded in 2010 by AI and cybersecurity experts from the mobile industry and defence research industry. Co-Founders Nick Allott (CEO) and Anita Allott (Director of Economics and Strategy) boast impressive credentials; Nick holds a Degree in Cognitive Science from Nottingham University...

External demo of product quality

Concept: **Fully automatic cybersecurity news feed**
<https://nquiringminds.com/cybernews/>

Automatically generate five to 10 cybersecurity stories per day

- Search the internet for a new cybersecurity news story
- Find the same news story elsewhere
- Use an LLM to read the stories and then generate our own version
- Repeat for lots of stories

We want our version of each story to be **factually accurate** and **fully referenced**

Should be good enough to **run unattended**

Choosing an LLM provider

Chose OpenAI as the LLM API provider

- only one at the time
- models are **cost effective** and **perform well**

Much more choice now, but **most models are marginal** for most applications

- AI21
- Cohere
- Anthropic
- Open source – disruptive in future

Choice is non-trivial

- benchmarks are **not very helpful** in selecting models
- performance depends on prompt engineering

Problems encountered and practical lessons learned

LLMs tend to make things up

Question: What is the largest star?

The largest known star is UY Scuti, a red supergiant in the constellation Scutum. It has a radius of 1,708 times that of the Sun and is around **5,000 light-years away from Earth.**

Question: Present a detailed analysis of the evidence as to whether Google censors content relating to the coronavirus vaccine.

Based on the available evidence, there is no clear consensus as to whether Google censors content related to the coronavirus vaccine. **The UK Government has raised concerns with Google about potential censorship of content related to the vaccine, to which Google has responded that it does not censor such content.**

LLMs tend to make things up

Called “hallucination” in the industry

Practical lessons

- Tendency to hallucinate is very strong with free text outputs but **can largely be eliminated** with good prompt engineering
 - Tell the LLM what to do when it doesn't know the answer to a question, give it examples of what to do, provide it with the information it needs to answer, etc.
- Hallucinations can occur intermittently, so **test thoroughly** to make sure they're rare enough for your use case
 - But, how do you know if an output contains a hallucination?
 - Difficult if the LLM is generating free text outputs

LLMs are very sensitive to their prompts



*Question: How do I segment **my** network?*

To segment a network using EdgeSec, one must use VLAN tagging to separate the network into individual subnets. EdgeSec provides a set of algorithms to address fundamental security weaknesses...

*Question: How do I segment **a** network?*

EdgeSec provides a range of tools to help segment a network, including VLAN tagging, which allows users to create individual subnets. EdgeSec also provides a Supervisor Service API...

- LLMs don't really “**understand**” in the way that people do
- LLMs generate text sequentially word-by-word, and the choice of each word depends on the words that came before, making the generated text unstable

LLMs are very sensitive to their prompts

Prompt “engineering” is all about optimizing the words that you use to tell an LLM what to do

Practical lessons

- Prompt engineering is difficult and time-consuming
 - changes can have **arbitrary** and **unpredictable** effects
 - the same prompt is not always interpreted the same way
 - natural language outputs are **difficult to regression test**
- Allow plenty of time for prompt engineering
 - **test prompts thoroughly**
 - become familiar with prompting **tips and tricks**

LLMs are very sensitive to their prompts

Practical lessons

- Prompts are **not portable** between LLMs
 - same prompt, different model -> different output
 - small differences in models -> big differences in output
- Switching provider is likely to require significant **prompt re-engineering**, resulting in lock-in

LLMs can be difficult to control

Failure to understand / follow instructions

- Examples of instructions ignored:
 - “Titles will be in title case...”
 - “Do not refer to the source text...”
 - “Format the results according to the JSON schema...”
 - “The text should have a formal style...”
- Sometimes LLMs take **surprisingly literal** interpretations
 - e.g. “The first story is about a cyberattack on WH Smiths, but the second story is about the announcement of a cyberattack on WH Smiths; therefore, the stories are not about the same event.”

LLMs can be difficult to control

Practical lessons

- Prompt engineering is difficult and time-consuming
 - Instructions can be **misunderstood** or **completely ignored**; this can happen some of the time or all the time
 - **Avoid ambiguous instructions** and think very carefully about possible alternative interpretations of prompts
 - Provide **examples** that demonstrate the desired behaviour
 - **Avoid** using “no” and “not” as they are often ignored and can make LLMs do the opposite of what you want
 - It matters where instructions appear in a prompt, so put what is most important at the **start or end of the prompt**

LLMs introduce new vulnerabilities

Prompts do not intrinsically separate “code” (text giving instructions for action) from “data” (text to be acted upon)

- Gives rise to **novel security vulnerabilities**
 - Prompt injection attacks, where content injected into a prompt modifies LLM behaviour; analogous to SQL injection attacks
 - **Prompt extraction** - hackers can extract prompts used by an application, exposing the IP of the application builder
 - **Hijacking** - hackers can change the behaviour of an LLM in an application and use it to manipulate the application’s users

LLMs have limited capabilities



Short context length

- LLMs have **no memory** and can **only read a few thousand words** at a time. This can have unexpected effects:
 - e.g. fails to effectively summarise long passages of text
 - e.g. forgets your name during a conversation

Limited **reasoning capabilities** and **understanding**

- will sometimes make mistakes that no person ever would

Practical lessons

- LLMs aren't good at everything
 - Are they really the **best tool for the job?**
 - Can they actually do what you want them to do?
 - Consider **cheaper / faster / simpler / more controllable** alternatives
 - Don't prompt engineer forever

Problems with LLM APIs



LLM behaviour can change abruptly and unpredictably when models are updated

- See, for example, Chen et al., *How is ChatGPT changing over time?*
 - Likelihood of refusing to answer
 - Accuracy and correctness
 - Verbosity and style
- **No long-term support** for 'old' models
- **No official support** for users

LLM outputs may be **stochastic** even if you ask the API to make them deterministic

- Makes regression testing and continuous integration testing **extremely difficult**

APIs might be unreliable

- High failure rate, highly variable response time
- Long default timeouts can **hide problems** in official performance statistics

Problems with LLM APIs

Provider may **use your data** for their own purposes, so check T&Cs, privacy policy and monitor them for updates

Consider risks to **privacy** and **intellectual property**

Practical lessons

- Be wary of the availability and responsiveness of the APIs
- **Prepare for model updates** in advance and use the overlap between old and new models to test and re-engineer prompts if necessary
- Be careful of the information **you send** to APIs
- Consider T&Cs, privacy policy, API performance and provider behaviour when choosing a provider, not just LLM performance
- Support the development of **open source** LLMs

Conclusion

LLMs provide **radically new capabilities** in an easy-to-use form; one-stop-shop for a wide range of complex natural language tasks in a wide range of languages

Easy to get exciting results in-the-lab, more difficult to reach **product quality**; don't underestimate the time required

Technology and ecosystem is **immature** and will cause problems; providers are still learning, but both will **improve rapidly** – more choice and competition is on the way

LLM users face risks from **bad regulation, bad journalism, bad applications** and the **politicization** of the technology



nquiringminds

**Practical lessons from
LLM application
development**

John Manslow, CTO
john@nqminds.com

ChatGPT, Generative AI and Large Language Models Workshop: Supporting UK businesses to benefit from the AI revolution

18 September | Newcastle

09:30 - 16:00



Innovate
UK



Northumbria
University
NEWCASTLE



Newcastle
University



Teesside
University



National Innovation
Centre Data

AI-Augmented Scenario Planning

Architecting Futuristic Sustainable Cities

Innovate UK Workshop:
ChatGPT, Generative AI and LLMs

Angel Salazar PhD

World Innovation and Change Management Institute
& Angel AI Ltd

Innovate UK Workshop:
ChatGPT, Generative AI and LLMs

World Innovation and Change Management Institute

[Who we are](#) [Areas of involvement](#) [Sharing Knowledge](#) [Certification](#) [Join Us](#) [Insights](#) [Contacts](#)



Sharing knowledge and Experience



GOAL

Using AI tools to generate plausible **growth scenarios** for Manchester to become a sustainable and tech-enabled city.

Explore the **risks** of misusing **technology and AI** that are associated with that future scenario.

Identify the **factors** shaping the evolution of alternative growth scenarios.



Photo by William McCue via Unsplash

Where should we start?

ROLE

CONTEXT

TASK

FORMAT

ROLE

ACT as city planning expert with knowledge of sustainable development and architecting socio-technical ecosystems leveraging new technology such as big data, electric smart cars, internet-of-things (i.e., sensors), robotics, and artificial intelligence.

CONTEXT

In a comprehensive planning session with distinguished city planning experts, we delve into the intricate aspects of Manchester's journey towards sustainability and its evolution into a technology-driven metropolis. The session is dedicated to exploring plausible growth scenarios for the city and dissecting the critical elements that underpin this transformative vision. Our experts need to steer the discussion by identifying the key drivers propelling Manchester towards this ambitious future while also scrutinising the formidable barriers that stand in its path. Through meticulous analysis, we aim to uncover the precise forces and obstacles shaping the city's destiny.

CONTEXT (cont)

Furthermore, the session extends its focus to the ethical and strategic considerations surrounding the integration of technology and artificial intelligence (AI) into the city's framework. We want to engage in a thoughtful examination of the potential risks associated with misusing these technological advancements, thus ensuring that Manchester's growth aligns with both its sustainability objectives and ethical imperatives. This planning session encapsulates a collaborative effort to chart a course for Manchester's future, guided by expert insights, thorough analysis, and a commitment to fostering a sustainable, tech-centric urban landscape.

TASK A

ANSWER where should we start?

What are the questions we need to ask first?

What elements, ideas, factors, and mental models should we consider?

FORMAT

Provide your answer as ordered bullet points with their explanation and grouping these by common issues.

THE INITIAL REPLY

<https://chat.openai.com/share/52f56384-9a88-4956-b7de-fb299f6a26d4>

ADDITIONAL CONTEXT

A segment of the city population may not want a tech-centric city, but a people- and eco-centric city, in which tech is just a set of tools that could be deployed to help achieve this, or could be used in other ways, including negative ones.

Somewhat associated with city growth is the whole issue of who is responsible for architecting it, including the extent to which this is a democratic or at least participatory process. This is a process that can be constrained by patterns of property ownership for example.

TASK B

What are the risks associated with application of AI and other digital technologies into plans for the future development of a city like Manchester in a way that is both sustainable and people-centric?

TASK C

What are the main factors that could make these risks harder to avoid?

TASK D

Which of these positive and negative factors are both extremely important and extremely uncertain?

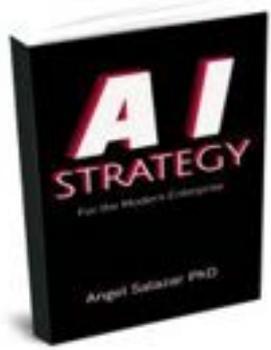
TASK E

Can you attempt to specify which of this set of factors are hardest to predict, or whose development is most uncertain?

TASK F

Taking two of these factors, can you generate four scenarios around the intersection of these factors if they develop in different ways?

Coming soon



AI Strategy for the Modern Enterprise

This book provides a comprehensive guide to developing an AI strategy that aligns with your business objectives. Learn how to leverage the latest techniques and technologies to transform your organisation.

#1 Maths and Statistical Skills on Amazon June '23



Compact Data Science

Discover the power of data science and how it can help you unlock insights, make better decisions, and drive business success. Available on Amazon, this book provides a practical and easy to follow guide to learning and using data science in the real world.

Coming soon



Limitless

Limitless is a groundbreaking book that serves as a beacon for business professionals, innovators, and creatives alike. This book is designed to spark curiosity and inspire readers by unveiling the extraordinary potential of Generative AI. Whether you're a business leader, a healthcare professional, an aspiring writer, or a musician, "Limitless" offers valuable insights and practical guidance.

ACKNOWLEDGEMENTS

The following people are actively contributing to refine the AI-augmented scenario planning approach presented here.

Emeritus Prof. Ian Miles, University of Manchester

Volker Hirsch, Medicines Discovery Catapult & Amadeus Capital

Praveen Tomar, OFGEM

Prof. Martin Kunc, Southampton Business School

THANKS!

If you would like to share your feedback about the presentation and overall approach, feel free to contact me.

angel@angelai.co.uk

www.angelai.co.uk

<https://www.linkedin.com/in/angeljsalazar/>





AI Awareness

Legal Issues Surrounding Large Language Models



Introduction

- Case Studies
- Legal Frameworks
- Key Risks in Using LLMs
- Practical Considerations
- Questions

OpenAI sued for defamation after ChatGPT fabricates legal accusations against radio host



Photo by Jakub Porzycki/NurPhoto via Getty Images

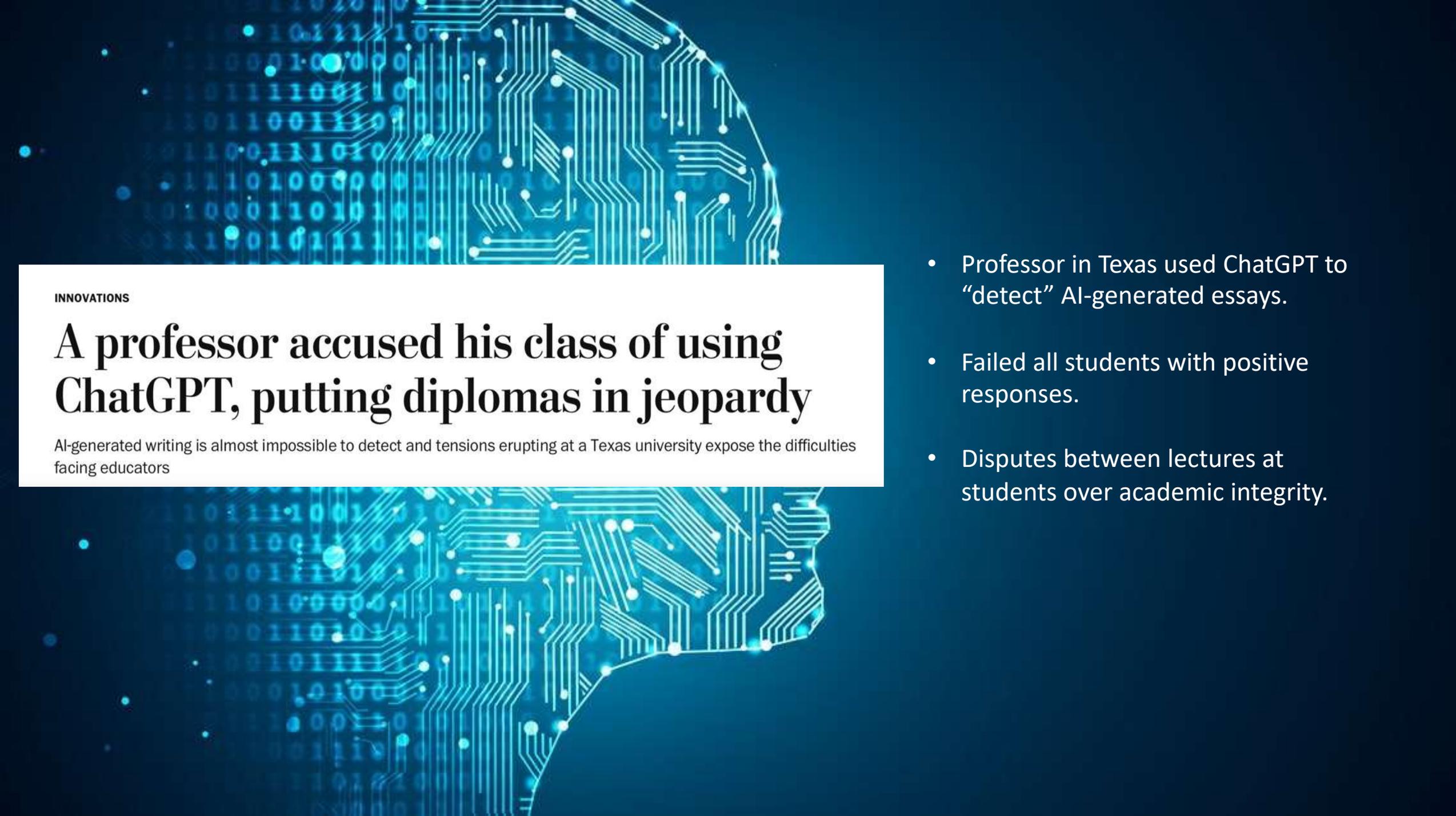
/ ChatGPT is notorious for generating false and misleading information, but this seems to be the first defamation case filed against creator OpenAI.

By [James Vincent](#), a senior reporter who has covered AI, robotics, and more for eight years at The Verge.

Jun 9, 2023 at 11:08 AM GMT+1 | [15 Comments](#) / [15 New](#)



- Open AI sued for defamation in US.
- Reporter used ChatGPT for research into a legal case.
- The LLM response suggested the Claimant (a radio host) was guilty of fraud and embezzling funds.
- Several similar responses to follow up questions.
- Responses false.
- Radio host now claiming over \$75,000 damages for defamation (libel).



INNOVATIONS

A professor accused his class of using ChatGPT, putting diplomas in jeopardy

AI-generated writing is almost impossible to detect and tensions erupting at a Texas university expose the difficulties facing educators

- Professor in Texas used ChatGPT to “detect” AI-generated essays.
- Failed all students with positive responses.
- Disputes between lectures at students over academic integrity.

Authors file a lawsuit against OpenAI for unlawfully 'ingesting' their books

Mona Awad and Paul Tremblay allege that their books, which are copyrighted, were 'used to train' ChatGPT because the chatbot generated 'very accurate summaries' of the works



- Group litigation of authors against OpenAI for copyright breaches.
- Allege that the LLM used their material to train ChatGPT.
- Use the material to create responses, without consent, credit or compensation to authors.
- Claim seeking unspecified damages and an injunction to prevent future use.

OpenAI, Microsoft hit with new US consumer privacy class action

By Blake Brittain

September 6, 2023 8:52 PM GMT+1 · Updated 10 days ago



- Group litigation against OpenAI and Microsoft.
- Alleged that they use millions of personal data to train ChatGPT.
- Sourced from social media and other internet sites.
- Requesting unspecified damages and implementation of safeguards.



LEGAL FRAMEWORKS

UK AI Regulation



- White Paper 2023 – “pro-innovation approach.”
- No new legislation to regulate AI development or liability.
- Delegating to regulators (e.g. CMA, FCA, ICO) to implement the following principles:
 - Safety, security and robustness.
 - Transparency and explainability.
 - Fairness.
 - Accountability.
 - Contestability and redress.

EU AI Regulation



- AI Act & Product Liability Directive.
- 4-tier risk classification of AI systems (Unacceptable, high-risk, limited and moderate) and varying requirements.
- Disclosure obligations and reversal of the burden of proof to ensure consumer protection.
- Non-binding, but potential for “Brussels Effect.”



Liability

- 
- Key issue for AI development generally.
 - Several questions of AI development (black boxes, data/training material).
 - Existing law = T/Cs given effect.



ChatGPT T/Cs Clause 3(a)

- (a) **Your Content.** You may provide input to the Services (“Input”), and receive output generated and returned by the Services based on the Input (“Output”). Input and Output are collectively “Content.” As between the parties and to the extent permitted by applicable law, you own all Input. Subject to your compliance with these Terms, OpenAI hereby assigns to you all its right, title and interest in and to Output. This means you can use Content for any purpose, including commercial purposes such as sale or publication, if you comply with these Terms. OpenAI may use Content to provide and maintain the Services, comply with applicable law, and enforce our policies. You are responsible for Content, including for ensuring that it does not violate any applicable law or these Terms.



Implications of Clause 3(a)

- Shifts legal responsibility of the outputs to user.
- Risks identified to developer could be passed on to user.
- Limited recourse against OpenAI. Clause 7(c) of ChatGPT t/c act as waiver and limitation of liability:
 - “NEITHER WE NOR ANY OF OUR AFFILIATES OR LICENSORS **WILL BE LIABLE FOR ANY** INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES, INCLUDING DAMAGES FOR LOSS OF PROFITS, GOODWILL, USE, OR DATA OR OTHER LOSSES, **EVEN IF WE HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.** OUR AGGREGATE LIABILITY UNDER THESE TERMS SHALL NOT EXCEED THE GREATER OF THE **AMOUNT YOU PAID FOR THE SERVICE** THAT GAVE RISE TO THE CLAIM DURING THE 12 MONTHS BEFORE THE LIABILITY AROSE OR **ONE HUNDRED DOLLARS (\$100)**. THE LIMITATIONS IN THIS SECTION APPLY ONLY TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW.



Key Risks with LLMs



1. Intellectual Property

- Litigation against OpenAI heavy focus on copyright infringement during training.
- If correct, the output could constitute copyright breach if similar to the original.
- Risk passes to user for third party infringement.
- Similar third-party case with Getty Images v Stability AI.



2. Data Protection/Privacy

- Current litigation against OpenAI for scraping personal information.
- Possibility that outcomes have inadvertently processed data.
- T/Cs place this responsibility on users, despite them having no idea if data was processed correctly!
-



- Additional risk of Data Breaches. Clause 3(c) of ChatGPT T/Cs:

- We do not use Content that you provide to or receive from our API ("API Content") to develop or improve our Services. We may use Content from Services other than our API ("Non-API Content") to help develop and improve our Services. You can read more here about how Non-API Content may be used to improve model performance. If you do not want your Non-API Content used to improve Services, you can opt out by filling out this form. Please note that in some cases this may limit the ability of our Services to better address your specific use case.

- Gives OpenAI permission to use inputs to improve their services i.e. using personal data.
- Possibility of data breaches/distribution of confidential info.
- Obligation on user to ensure GDPR compliance.



3. Misinformation/Inaccuracy

- Clause 3(d): (d) **Accuracy**. Artificial intelligence and machine learning are rapidly evolving fields of study. We are constantly working to improve our Services to make them more accurate, reliable, safe and beneficial. Given the probabilistic nature of machine learning, use of our Services may in some situations result in incorrect Output that does not accurately reflect real people, places, or facts. You should evaluate the accuracy of any Output as appropriate for your use case, including by using human review of the Output.
- Hallucinations/false claims possible.
- User could be responsible for this.
- Also possibility to make same output for different inputs.



Practical Considerations

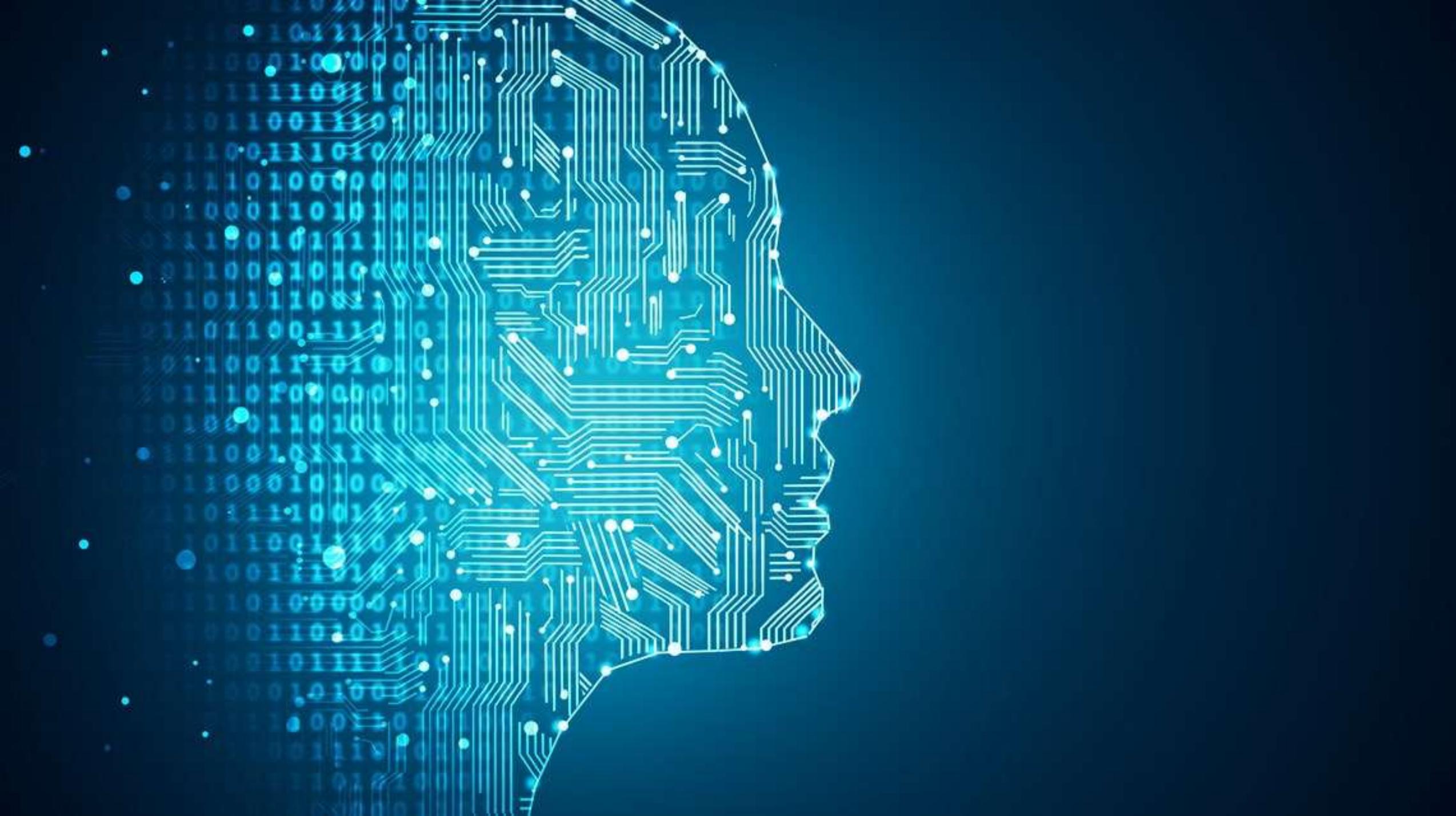
- Staff training – ensure the risks are understood by all.
- Corporate guidelines – set out which elements of the business can use LLMs, and which cannot, to mitigate risk.
- Check Check Check (human):
 - Similarities between the source and the output?
 - Accuracy of the output – does it reflect what you want it to say? E.g. a client email, a customer response, a contract negotiation.
 - Has any data or confidential information been disclosed in the input? Have you opted out?

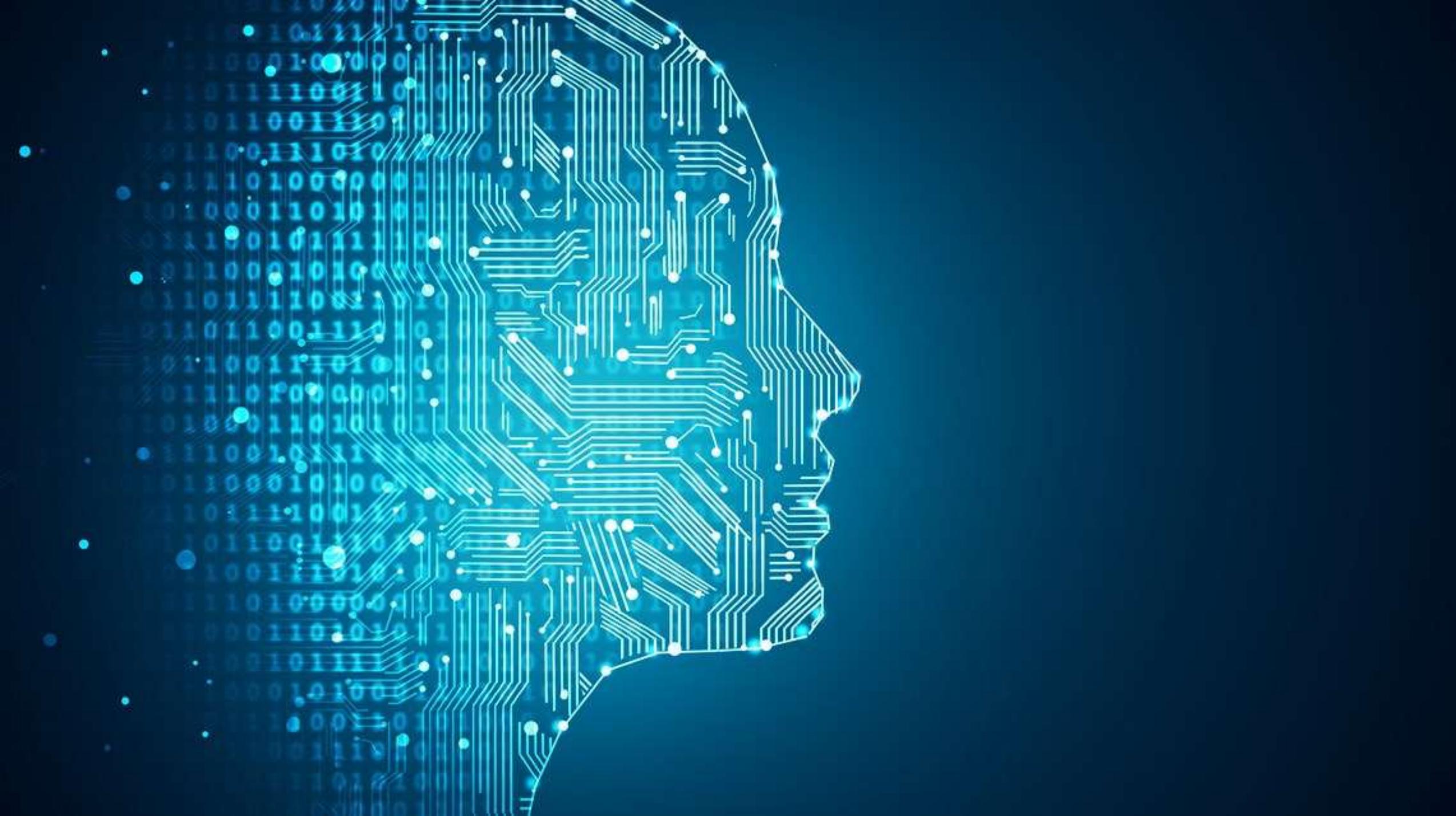


Questions?

Charlie Stonehill (*Charlton
Stonehill Ltd – Director*)

info@charltonstonehill.com





Finding the needle in the haystack

Stephen McGough

Reader in Machine Learning

Fellow, Alan Turing Institute

AI lead, for NUCoRE Cyber Security & Resilience

AI lead, for N8 Machine Learning (Newcastle)

Monday 18th September 2023

stephen.mcgough@Newcastle.ac.uk



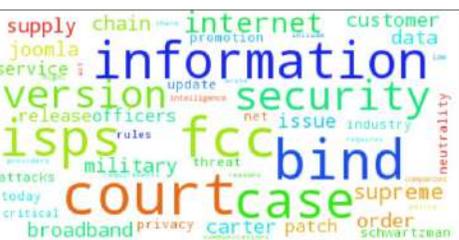
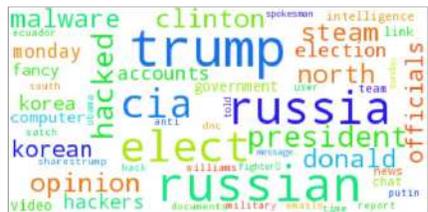
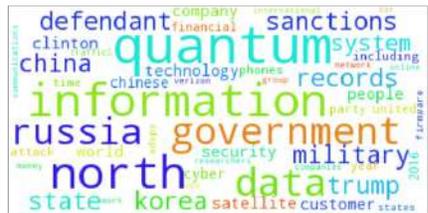
Suppose you have a lot of documents

- How to find what's in there?
- What's important?
- What's significant?



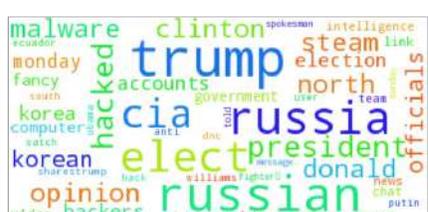
Topic Modelling: Latent Dirichlet Allocation (LDA)

Topics

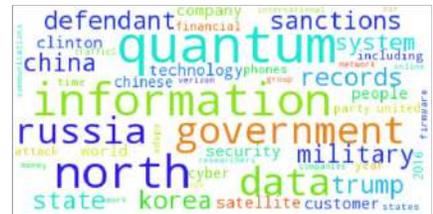
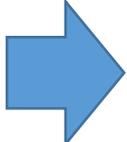


Topic Modelling: Latent Dirichlet Allocation (LDA)

Topics



Select topics

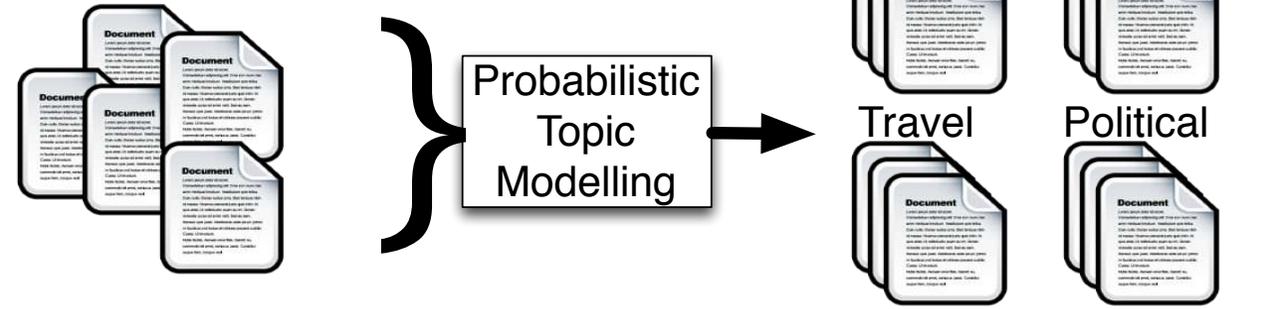


Select words from topics

US Govt Data Shows Russia Used Outdated Ukrainian PHP Malware

The United States government earlier this year officially accused Russia of interfering with the US elections. Earlier this year on October 7th, the Department of Homeland Security and the Office of the Director of National Intelligence

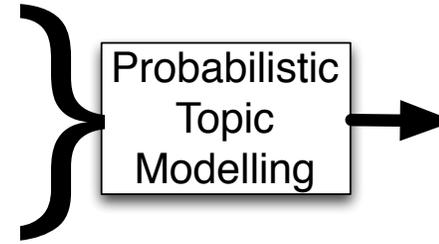
LDA in action



LDA in action



Similar



Gardnering Espionage

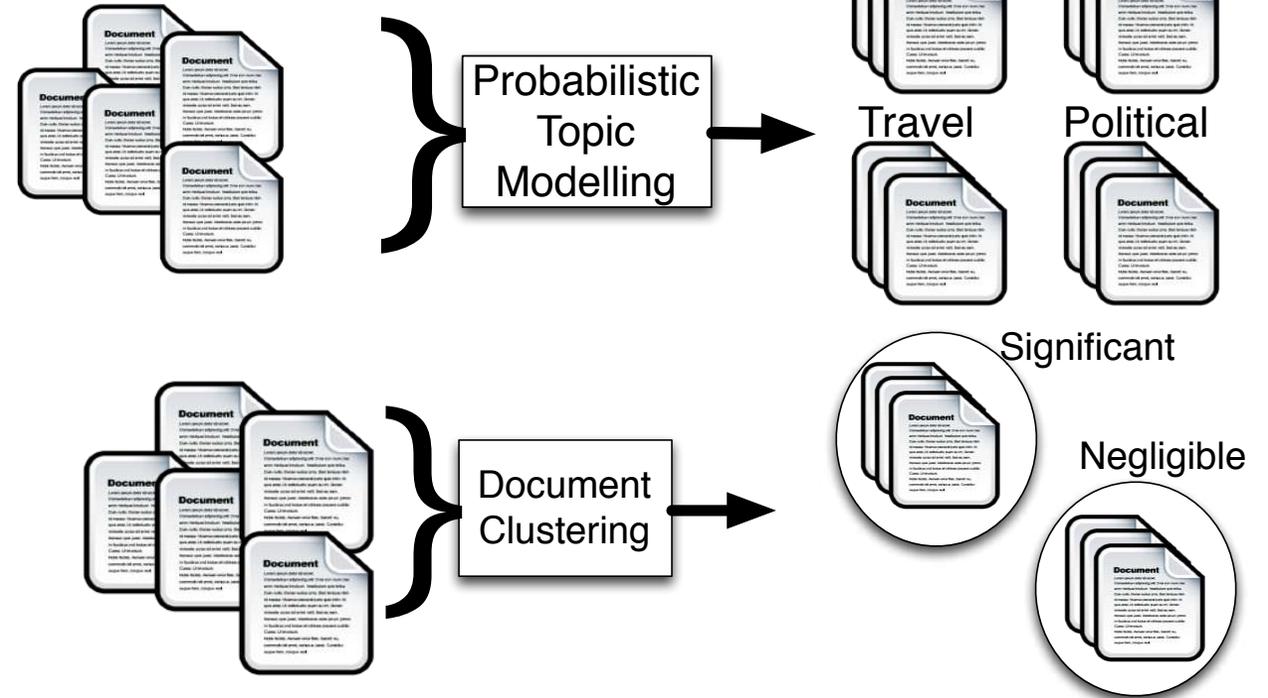
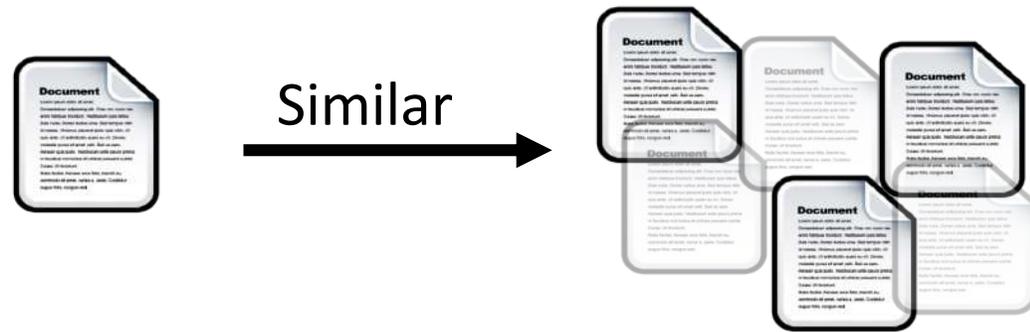


Travel

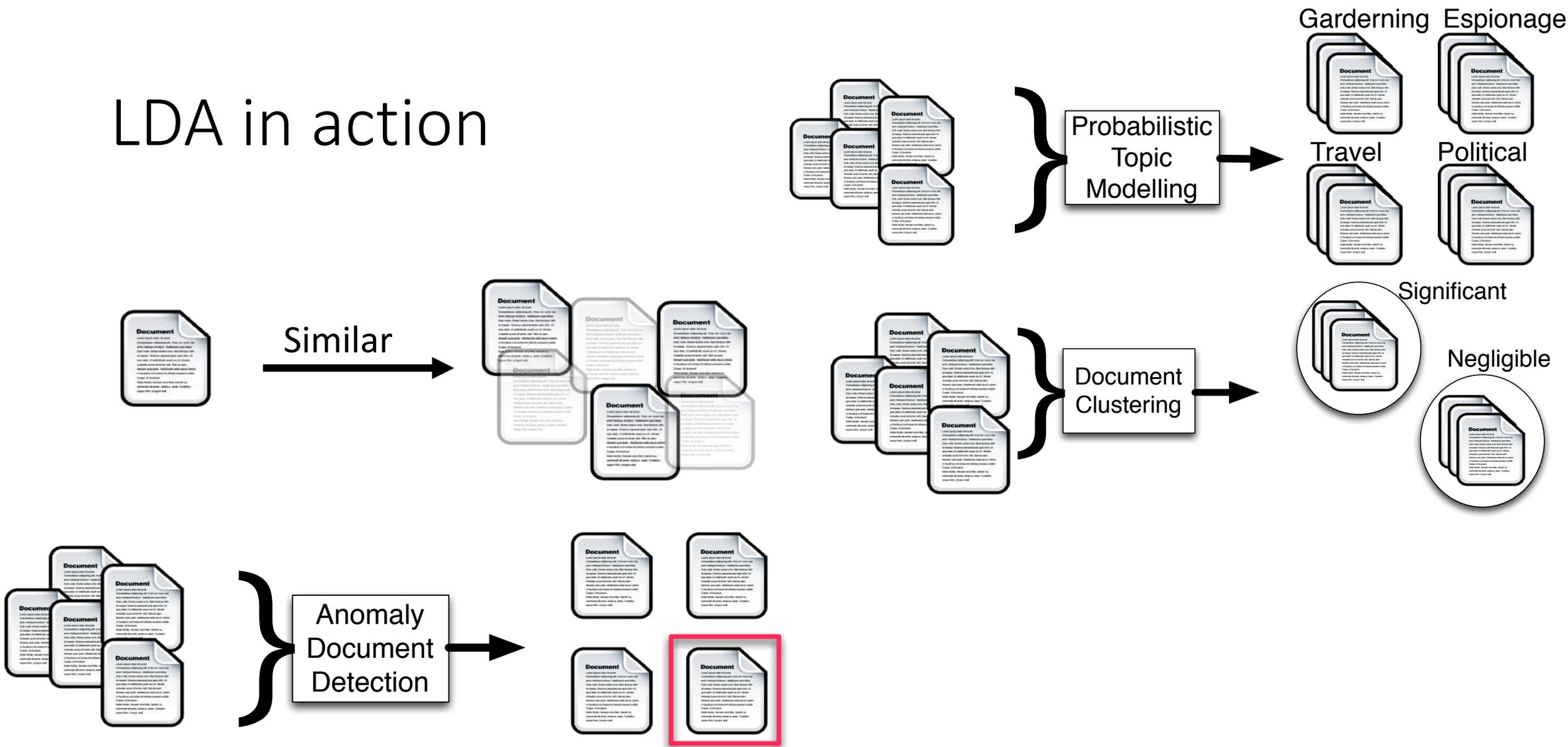
Political



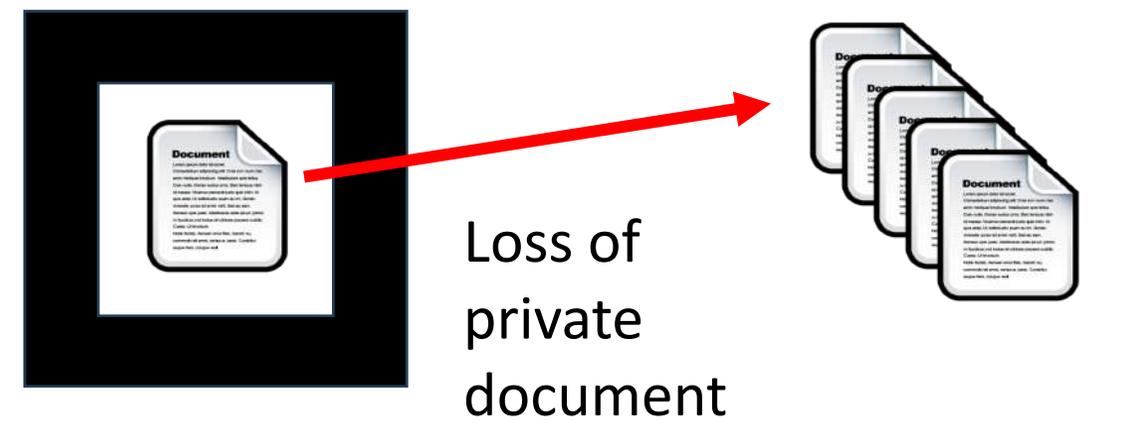
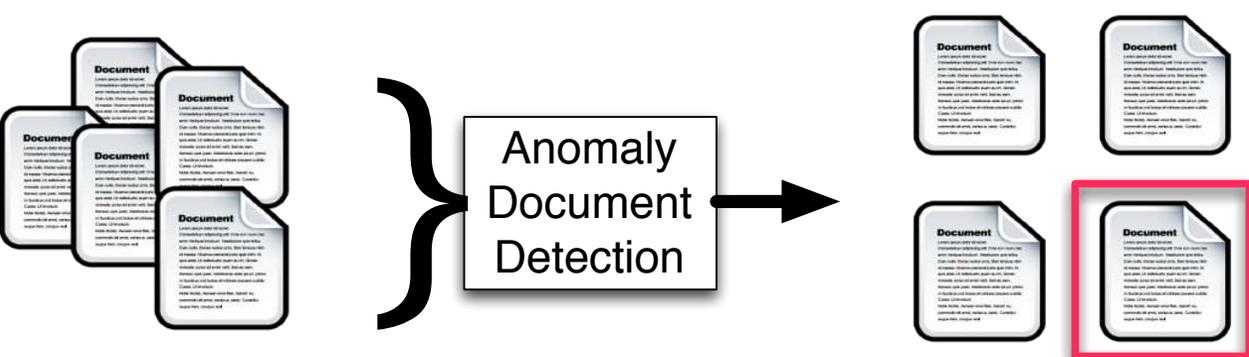
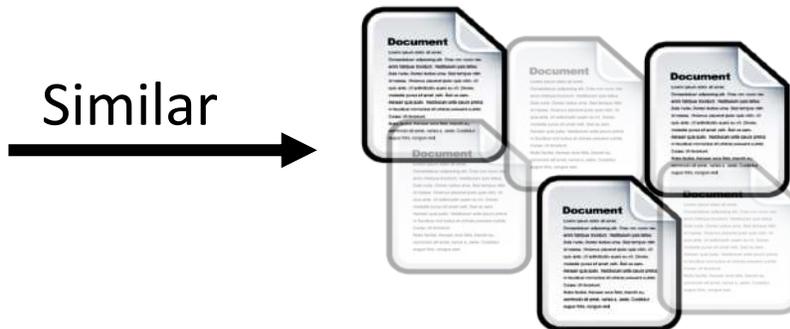
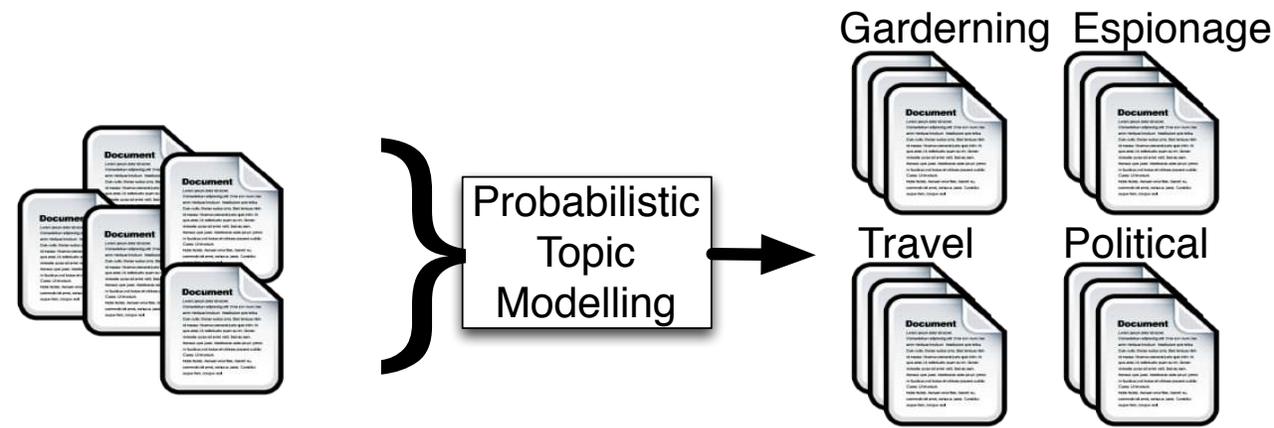
LDA in action



LDA in action



LDA in action



Using LDA

- “isis war in Syria and iran Saudi crises for killing shia man”

Search Engine based on Topic Modelling



Upload file
 no file selected

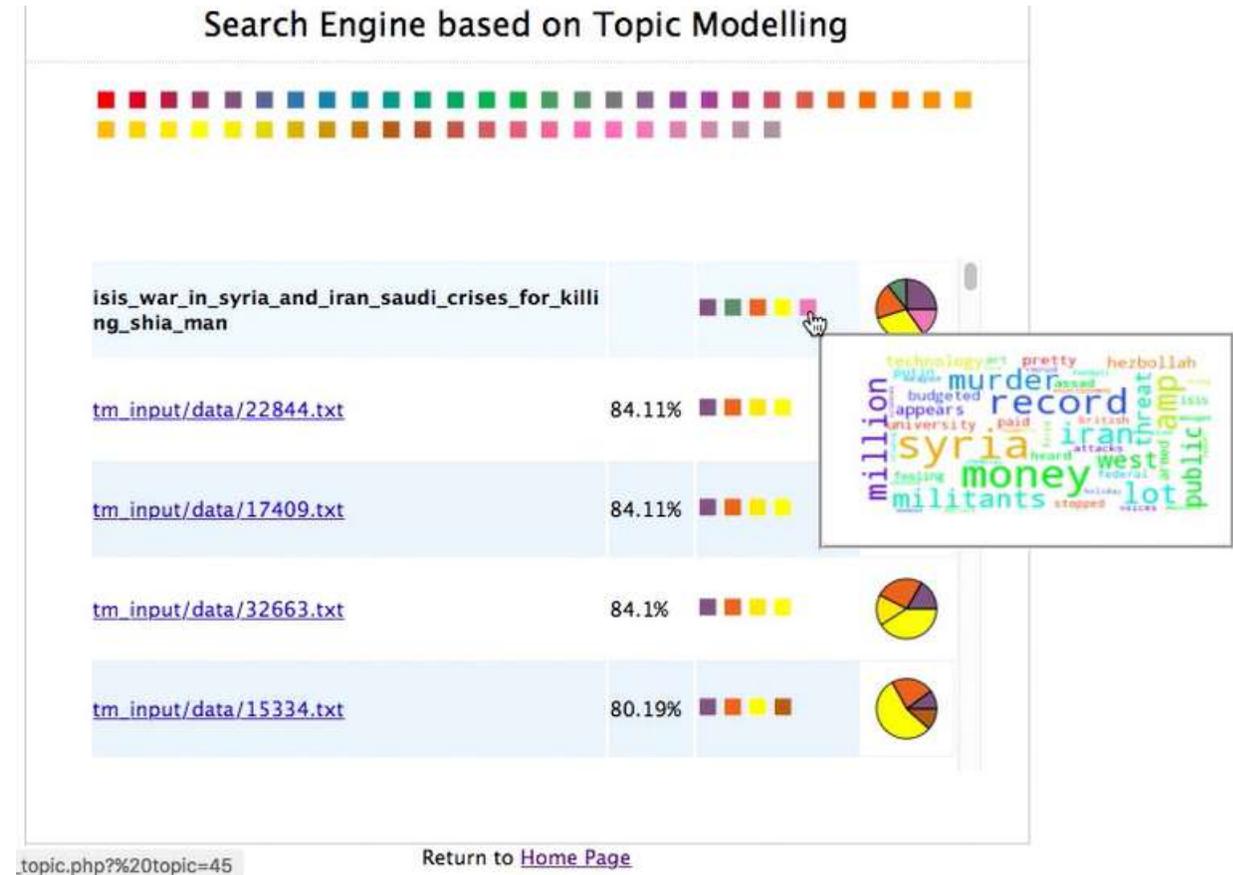
User Query

No. Displayed Results

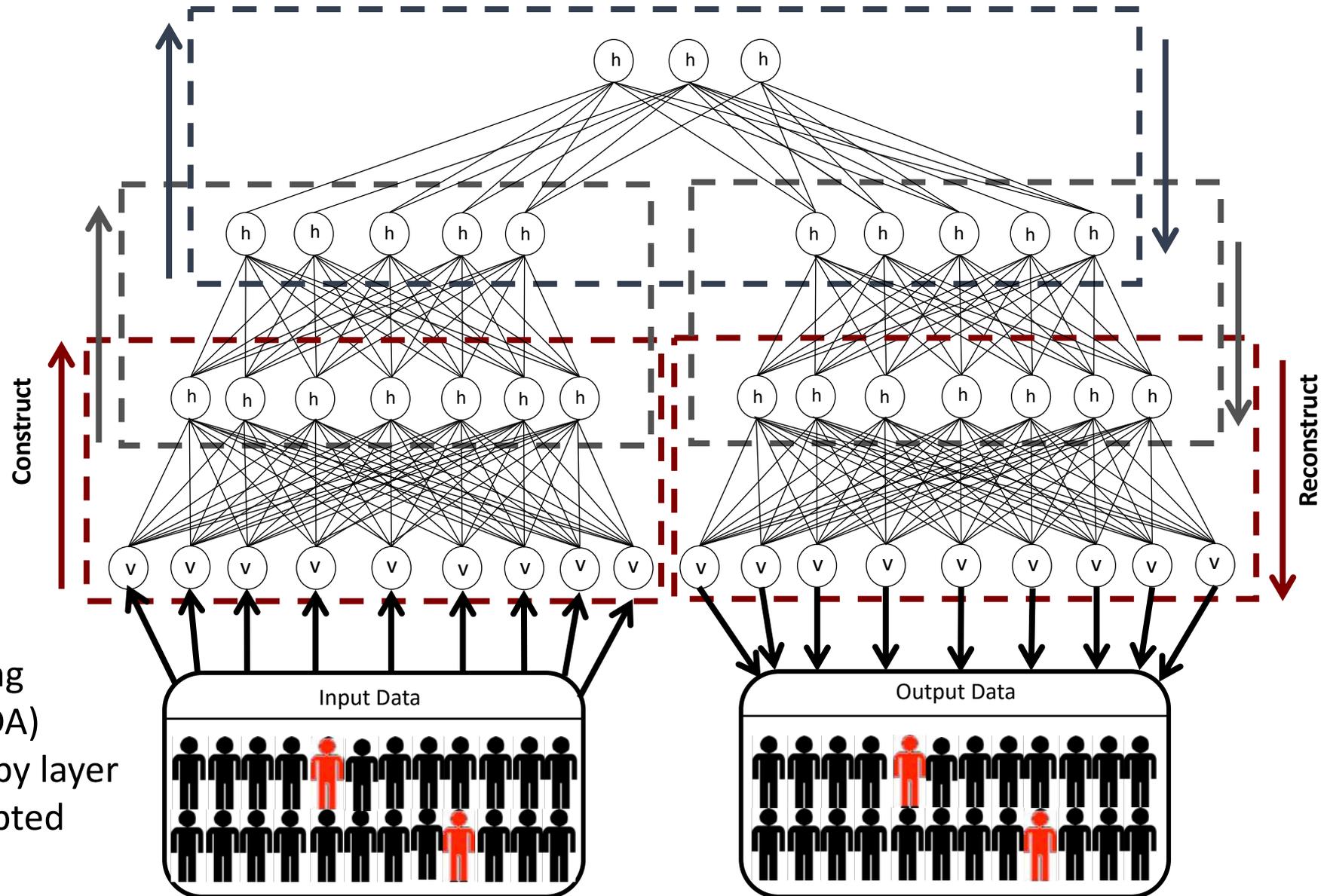
[Return to Home Page](#)

Using LDA

- “isis war in Syria and iran Saudi crises for killing shia man”



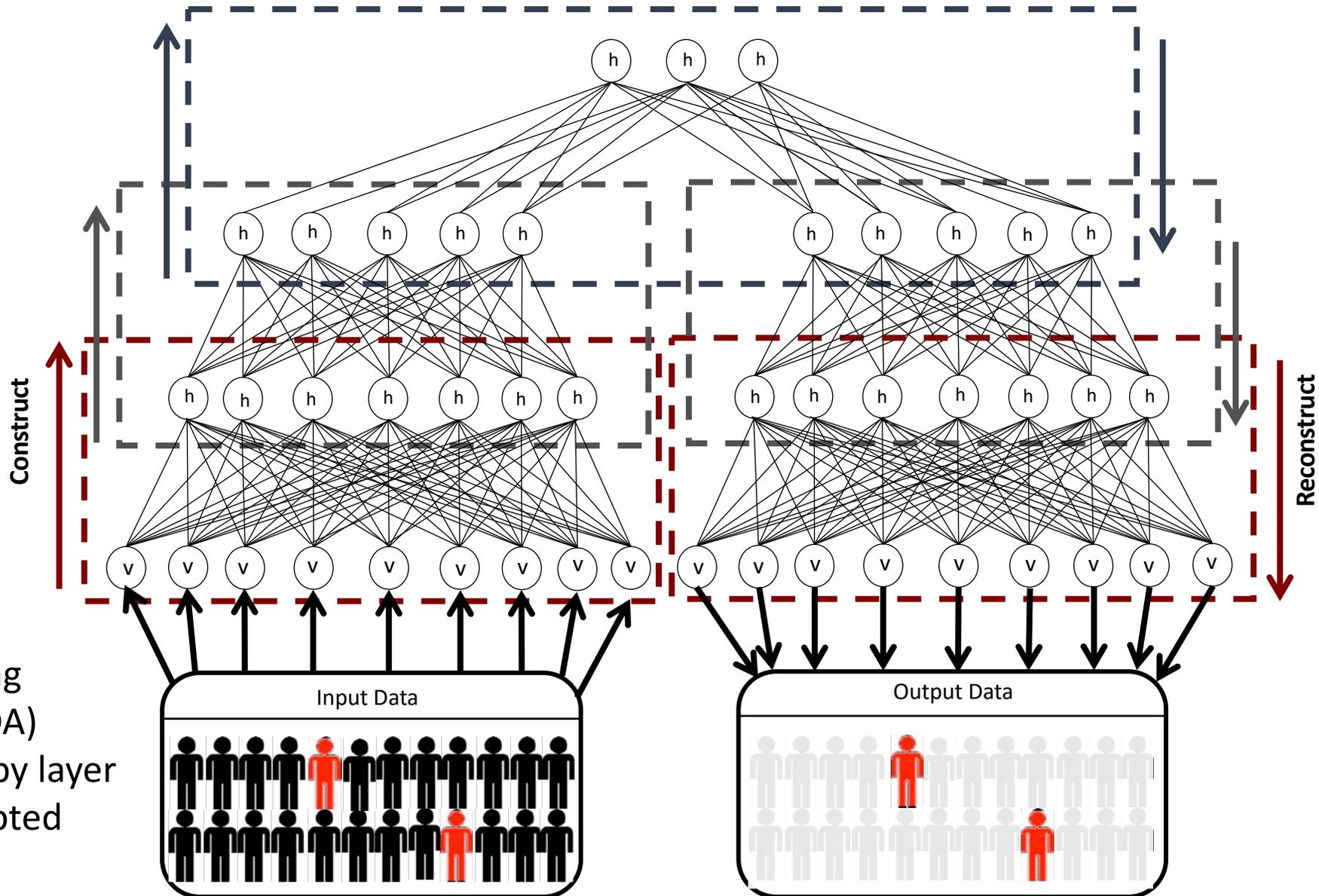
Anomaly Detection: Unsupervised Deep Learning



Stacked Denoising
Autoencoder (SDA)

- Trained layer by layer
- Input is corrupted with noise

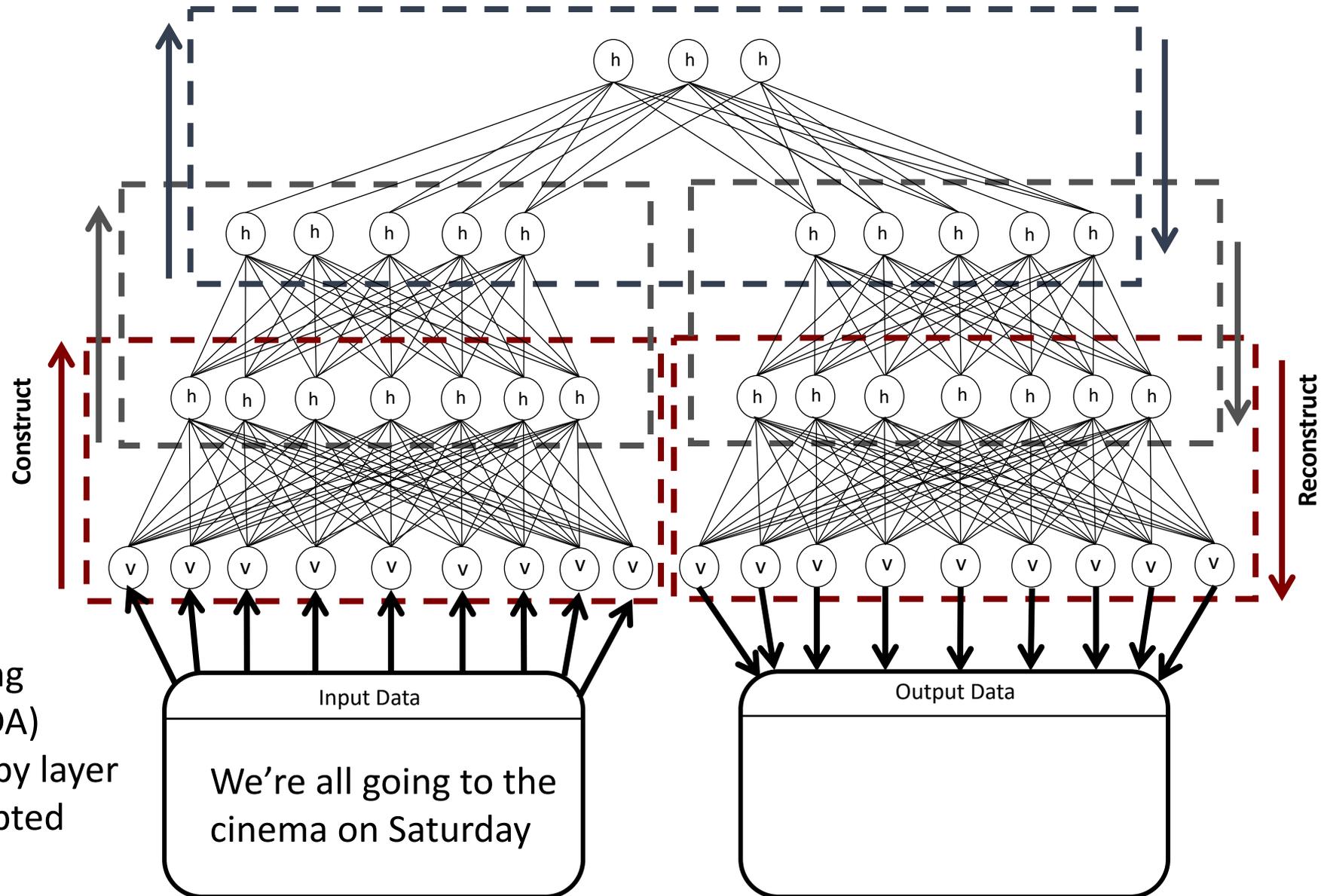
Anomaly Detection: Unsupervised Deep Learning



Stacked Denoising
Autoencoder (SDA)

- Trained layer by layer
- Input is corrupted with noise

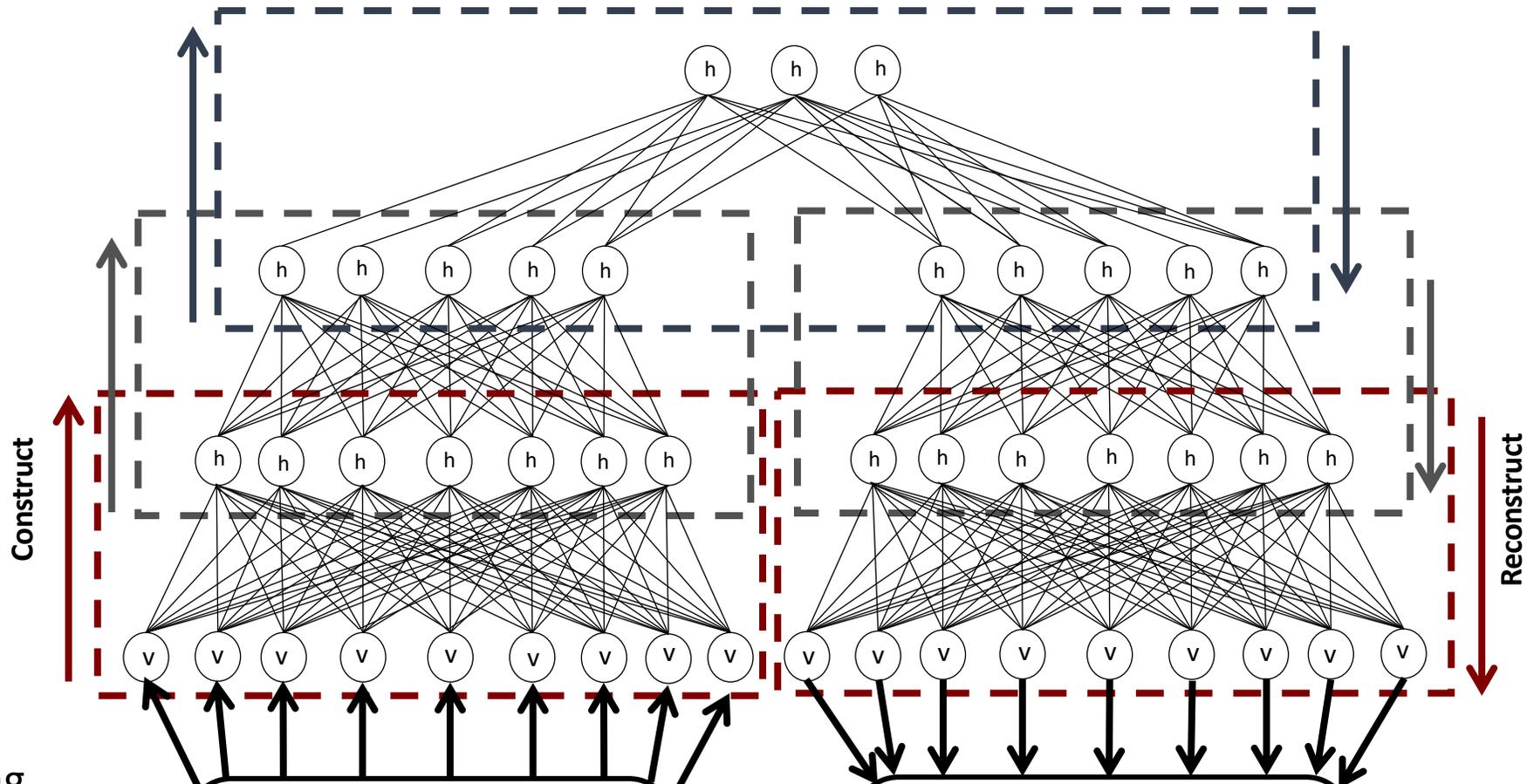
Anomaly Detection: Unsupervised Deep Learning



Stacked Denoising Autoencoder (SDA)

- Trained layer by layer
- Input is corrupted with noise

Anomaly Detection: Unsupervised Deep Learning



Stacked Denoising
Autoencoder (SDA)

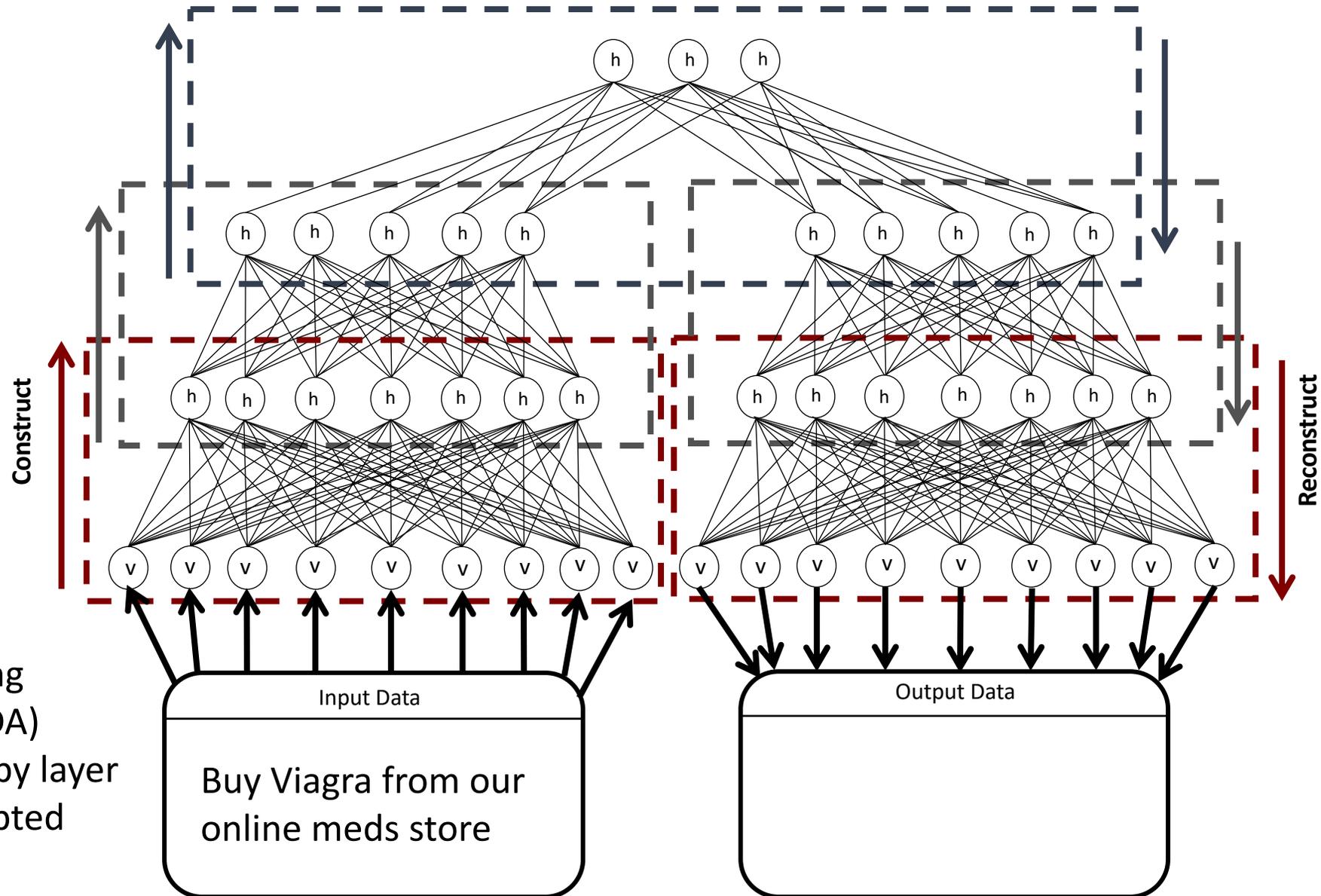
- Trained layer by layer
- Input is corrupted with noise

We're all going to the
cinema on Saturday

We're all going to the
theatre on Saturday

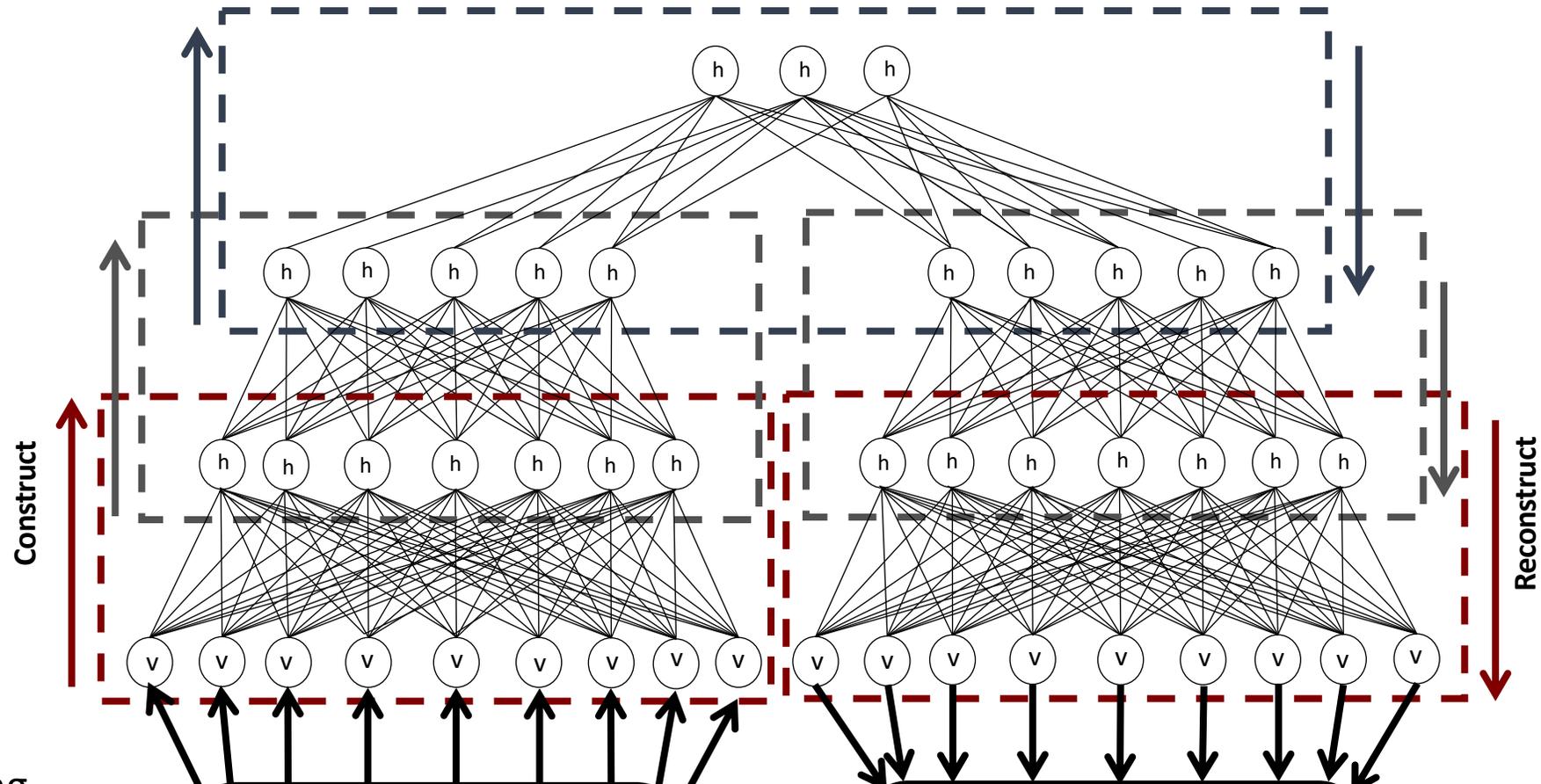
Low reconstruction
error

Anomaly Detection: Unsupervised Deep Learning



- Stacked Denoising Autoencoder (SDA)
- Trained layer by layer
 - Input is corrupted with noise

Anomaly Detection: Unsupervised Deep Learning



Stacked Denoising
Autoencoder (SDA)

- Trained layer by layer
- Input is corrupted with noise

Input Data
Buy Viagra from our
online meds store

Output Data

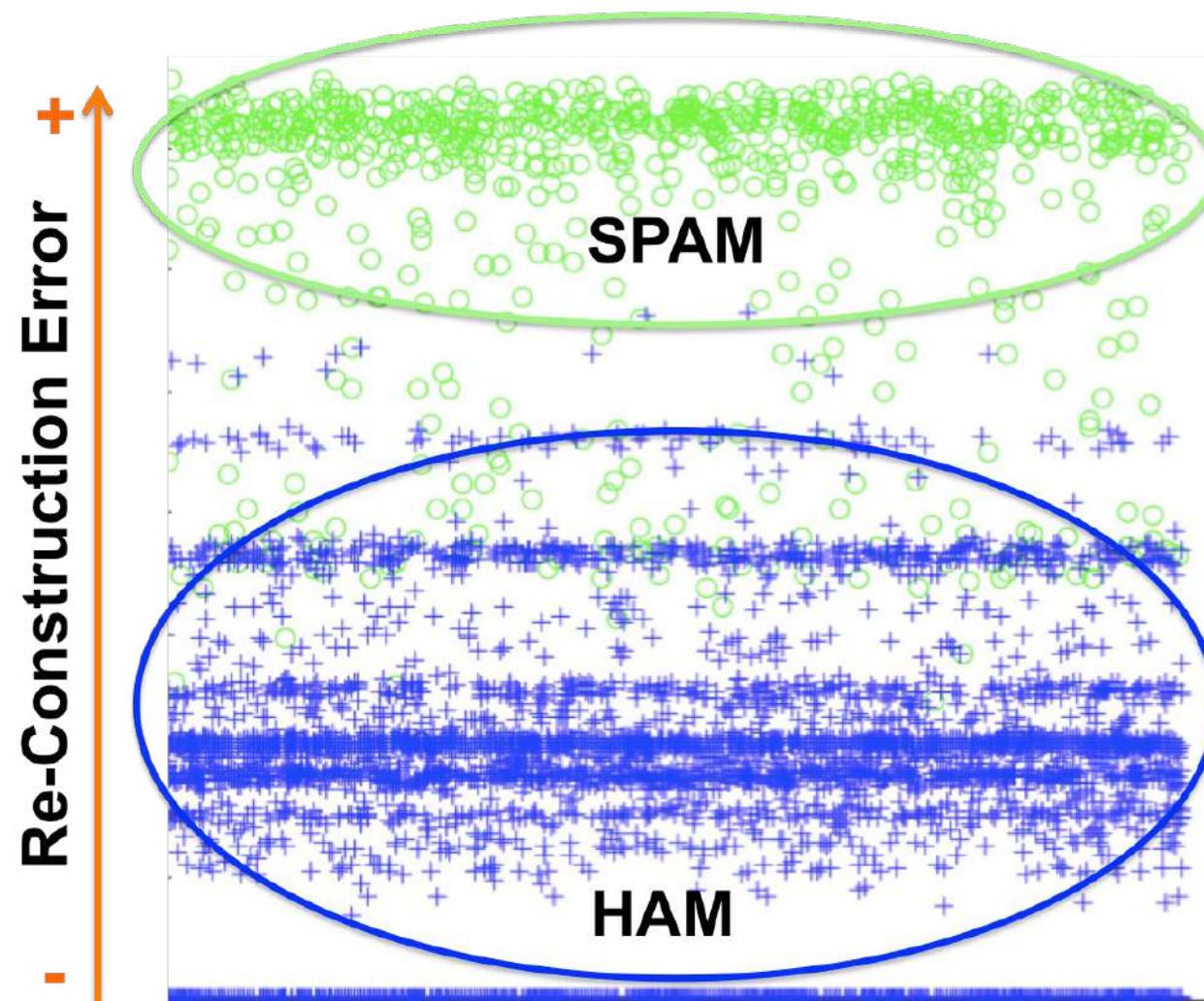
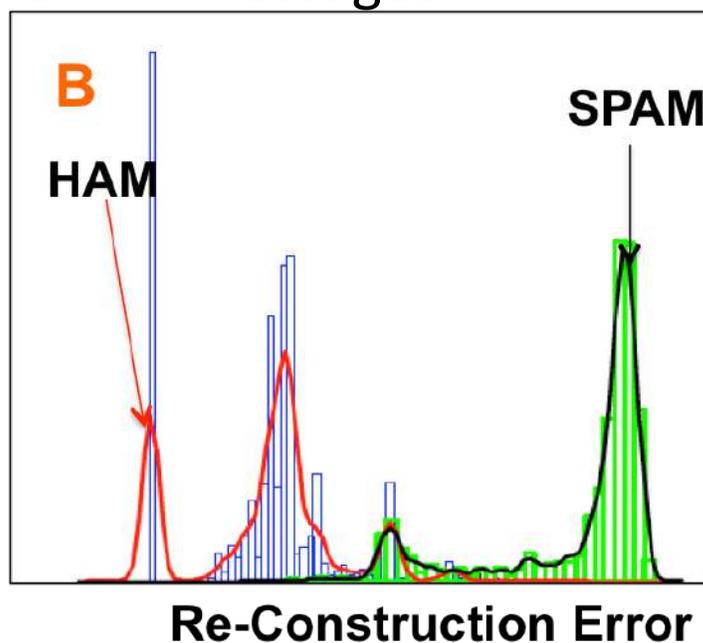
By the valley our
overall medals store

High reconstruction
error

Example: Anomaly Identification

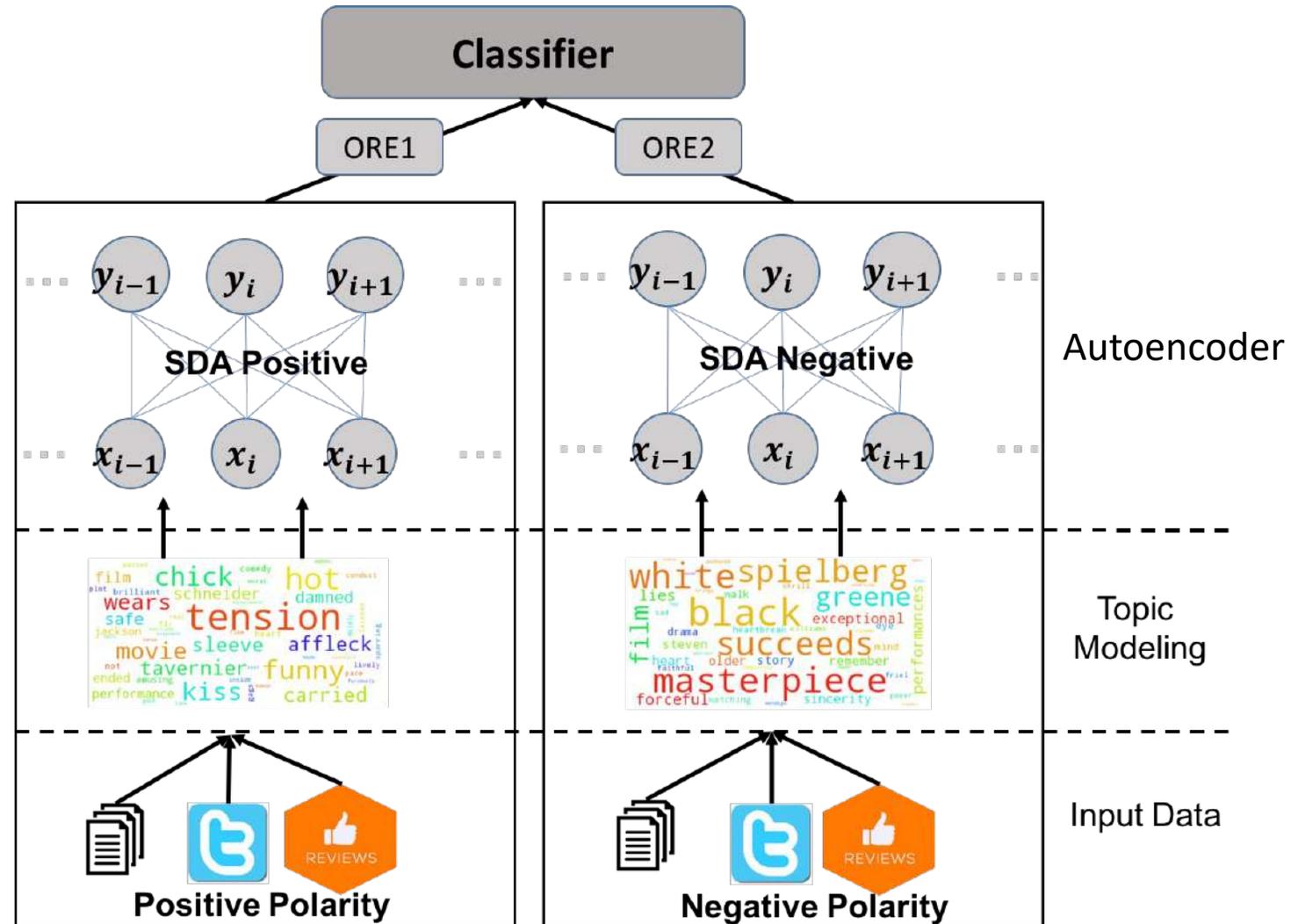
SPAM and HAM in SMS

- Auto-identification of SPAM from HAM in SMS messages
- 5574 SMS messages processed
- 4827 HAM messages
- 747 SPAM messages

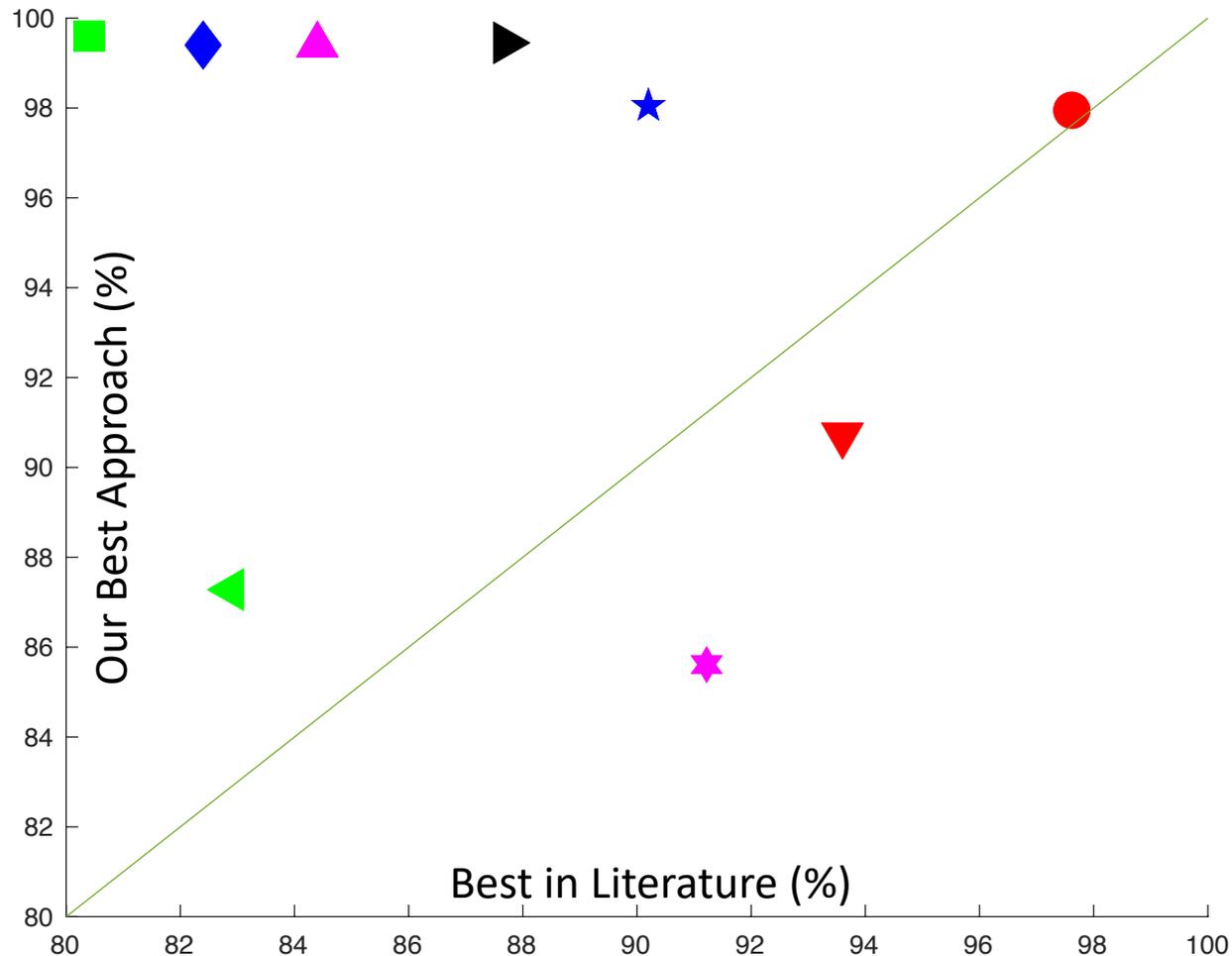


Multiple Labels Example: Deep Learning for Sentiment Classification

- Train an anomaly detector on each label
 - Can have many labels
 - E.g. positive & negative reviews
- Generate overall reconstruction error (ORE) for each label
- Use simple classifier on OREs to identify class



Performance Analysis



Problem	Best Literature	Best Our Approach
● SMS Spam	97.64	97.92
■ MDSD-B(%)	80.4	99.6
◆ MDSD-D(%)	82.4	99.4
▲ MDSD-E(%)	84.4	99.4
▶ MDSD-K(%)	87.7	99.45
▼ Movie-Sub	93.6	90.72
◀ Movie-Rev1	82.9	87.28
★ Movie-Rev2	90.2	98.05
☆ IMDB	91.22	85.61

Ordering hard text with Large Language Models

Movie Review:

while plagued with a plodding mess of a narrative, the sincere performance of the main character salvages the clichéd dialogue and provides some escapism from the distorted perspective of the protagonist.

Positive or Negative?

Positive	Neutral	Negative
----------	---------	----------

Looking for a REAL super bad movie? If you wanna have great fun, don't hesitate and check this one! Ferrigno is incredibly bad but is also the best of this mediocrity.

Positive	Neutral	Negative
----------	---------	----------

Looking for a REAL super bad movie? If you wanna have great fun, don't hesitate and check this one! Ferrigno is incredibly bad but is also the best of this mediocrity.

Worst horror film ever but funniest film ever rolled in one you have got to see this film it is so cheap it is unbelievable but you have to see it really!!!! P.s watch the carrot

Positive	Neutral	Negative
----------	---------	----------

Looking for a REAL super bad movie? If you wanna have great fun, don't hesitate and check this one! Ferrigno is incredibly bad but is also the best of this mediocrity.

Worst horror film ever but funniest film ever rolled in one you have got to see this film it is so cheap it is unbelievable but you have to see it really!!!! P.s watch the carrot

This movie is so bad it's almost good. Bad story, bad acting, bad music, you name it.

LLM for classification

Classification Model	(a) Stack Exchange			(b) Fine Foods		
	Accuracy	F ₁ Score	AUC	Accuracy	F ₁ Score	AUC
ALBERT [34]	0.272	0.278	0.618	0.722	0.617	0.810
RoBERTa [33]	0.281	0.291	0.635	0.705	0.590	0.809
GPT2 [32]	0.285	0.298	0.622	0.765	0.738	0.813
BERT [31]	0.292	0.309	0.648	0.768	0.721	0.828

Context is King



© MIRAMAX Films

This movie boasts groundbreaking direction, cinematography, screenwriting, soundtrack, and extraordinary performances (particularly by Thurman, Travolta, and Jackson).

I was looking forward to this like you wouldn't believe... but it all goes on for so long and it's not terribly witty.

Context is King



© MIRAMAX Films

This movie boasts groundbreaking direction, cinematography, screenwriting, soundtrack, and extraordinary performances (particularly by Thurman, Travolta, and Jackson).



I was looking forward to this like you wouldn't believe... but it all goes on for so long and it's not terribly witty.

Context is King

MARGARET POMERANZ

I actually found the film very moving, very honest, except maybe for its resolution

It is gripping stuff, with Russell Crowe so muscular and heroic in the central role and Joaquin Phoenix giving a really interesting interpretation to Commodus

Context is King

MARGARET POMERANZ

I actually found the film very moving, very honest, except maybe for its resolution

The Story of Us



It is gripping stuff, with Russell Crowe so muscular and heroic in the central role and Joaquin Phoenix giving a really interesting interpretation to Commodus

Gladiator

Context is King

- Classification

- One model per context
- Requires 1000's of examples per context
- Movie
- Reviewer ...

Pulp Fiction



ET



Jaws



Gladiator



A Haunting
in Venice



The Dark
Knight



LEGO
Movie



Cassandro

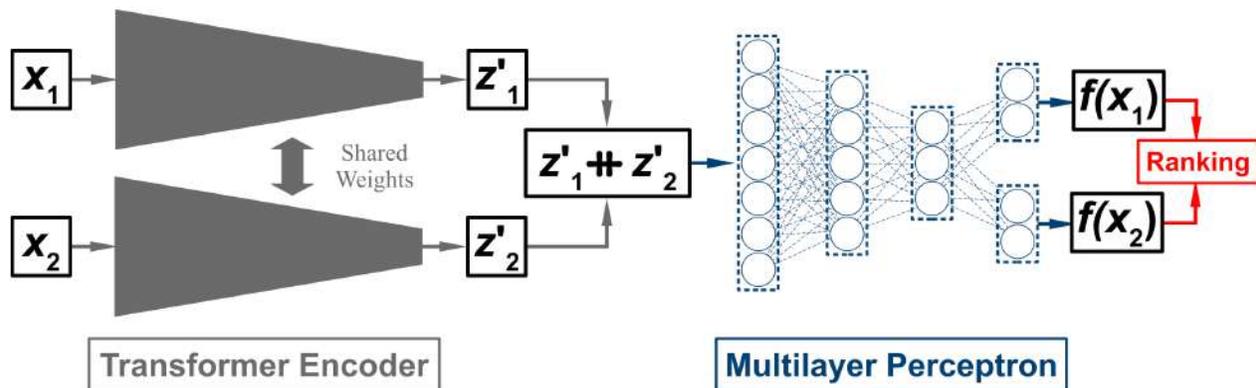


- Ranking

- Can Rank with a single model
- Use two items of the same context – pivot

- Copes with:

- Imbalanced data, Ambiguity in the data, Number of classes, unknown classes



Rank or Class?

	Approach	Ranking Metrics @ k			Pair Labels
		MRR	NDCG	MAP	Accuracy
(a) Stack Exchange	w/ ALBERT	0.656	0.772	0.662	0.854
	w/ RoBERTa	0.671	0.780	0.678	0.882
	w/ GPT2	0.760	0.806	0.764	0.895
	w/ BERT	0.762	0.814	0.768	0.910
(b) Review (User)	w/ ALBERT	0.970	0.982	0.976	0.985
	w/ RoBERTa	0.972	0.984	0.979	0.990
	w/ GPT2	0.975	0.986	0.982	0.991
	w/ BERT	0.977	0.986	0.984	0.990
(c) Review (Product)	w/ ALBERT	0.972	0.984	0.976	0.981
	w/ RoBERTa	0.970	0.982	0.972	0.985
	w/ GPT2	0.976	0.987	0.982	0.990
	w/ BERT	0.974	0.985	0.981	0.990

Rank or Class?

	Approach	Ranking Metrics @ k			Pair Labels
		MRR	NDCG	MAP	Accuracy
(a) Stack Exchange	w/ ALBERT	0.656	0.772	0.662	0.854
	w/ RoBERTa	0.671	0.780	0.678	0.882
	w/ GPT2	0.760	0.806	0.764	0.895
	w/ BERT	0.762	0.814	0.768	0.910
(b) Review (User)	w/ ALBERT	0.970	0.982	0.976	0.985
	w/ RoBERTa	0.972	0.984	0.979	0.990
	w/ GPT2	0.975	0.986	0.982	0.991
	w/ BERT	0.977	0.986	0.984	0.990
(c) Review (Product)	w/ ALBERT	0.972	0.984	0.976	0.981
	w/ RoBERTa	0.970	0.982	0.972	0.985
	w/ GPT2	0.976	0.987	0.982	0.990
	w/ BERT	0.974	0.985	0.981	0.990

Classification Model	(a) Stack Exchange	
	Accuracy	F ₁ Score
ALBERT [34]	0.272	0.278
RoBERTa [33]	0.281	0.291
GPT2 [32]	0.285	0.298
BERT [31]	0.292	0.309

Interested in your problem

- Too much of AI is focused on the same small collection of datasets
- Interested in novel and interesting data

stephen.mcgough@Newcastle.ac.uk

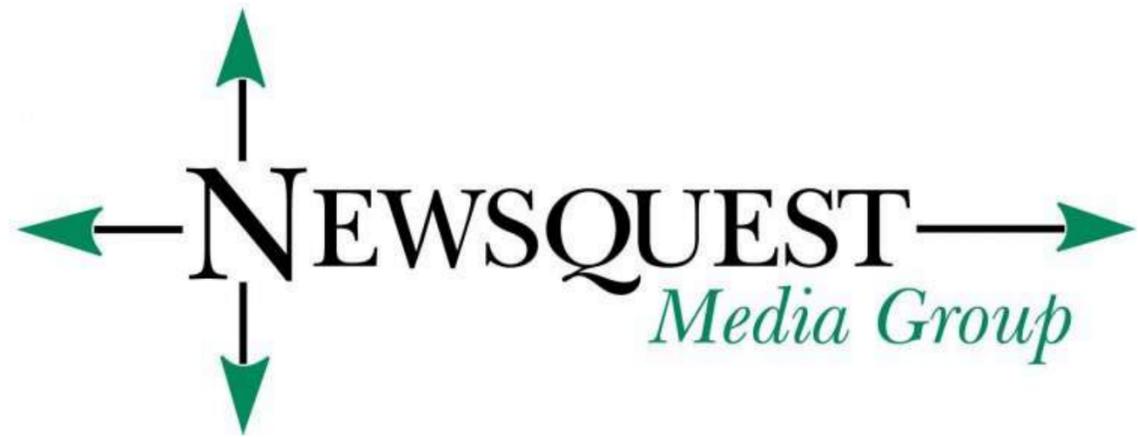




Share your story...



John Graham - CEO



D|STINCTIVE

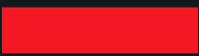


THE PROBLEM WITH TRADITIONAL PUBLISHING





NATURAL RESOURCE INTENSIVE



**DID YOU
KNOW?**

**10 LITRES OF FRESH
WATER = 1 SHEET OF A4.**

**1000 MAGAZINES = 1 PINE
TREE.**



**DID YOU
KNOW?**

THIS YEAR:
**70 MILLION ACRES OF
FOREST CULLED**

THE SIZE OF NORWAY

**DID YOU
KNOW?**

**WE PRODUCE 160K
PLASTIC BAGS PER
SECOND**

**DISTRIBUTION MEANS
HIGH SCOPE 3
EMISSIONS**

**WHY IS THIS A
PROBLEM?**

**BY 2040 – FRESH
WATER SHORTAGE**



**BY 2100 – NO RAIN
FORESTS**

**WE NEED TO
COMMUNICATE.**

SUSTAINABLY.

**NEXT GENERATION PUBLISHING & PR
PLATFORM**

REVEELA.COM



WE KNOW WHO. WHEN... AND WHY.

**DID YOU
KNOW?**

**REVEELA
UNDERSTANDS THE
CONTEXT OF CONTENT.**



**DID YOU
KNOW?**

**IT FINDS RELEVANT
AUDIENCES...**



EVERY LANGUAGE

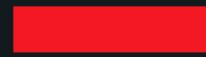


EVERY COUNTRY

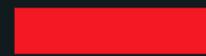
2
SECONDS.



**ZERO SHOT
LEARNING**



MINIMAL RETRAINING



**CONSIDERABLE ENERGY
SAVING**

90%
REDUCTION
IN CARBON
FOOTPRINT

400%
INCREASE IN
ENGAGEMENTS

VIDEO of DEMO

<https://vimeo.com/842548845>



www.reveela.com

Chat is Not All You Need!

Use LLMs to unlock value from your data

Reo Ogusu



AI Focused Software Development and Consultancy

Amplify Business Impact and Unlock New Possibilities



Agenda

01

**Why Chat
UX is Hard**

02

**Non-Chat
Applications**

03

Demo

04

**Tips & Final
Thoughts**

The chat interface led to an explosion of users!

A Cambrian explosion of products (mostly chat based)

- Customer support
- Q&A
- Talk to documents



 PDF.ai

 chatfai

Character.AI

Quickchat

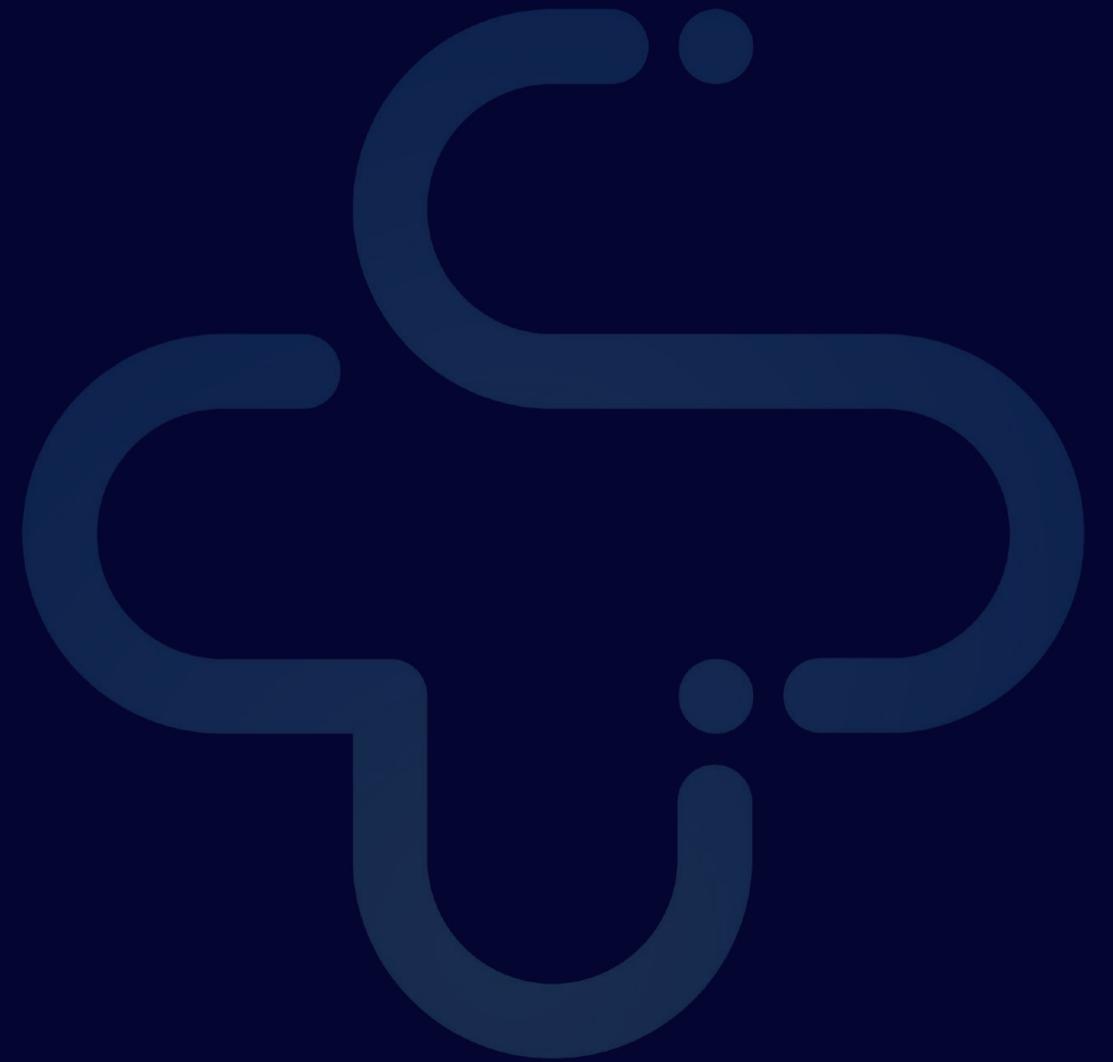
 Jasper

 Writesonic

 Perplexity

 HUMATA

Why chat based UX is hard?



Chat UX is hard to get right

Users are expected to:

- Have knowledge about what you are looking for
- Ask in a way that works best for LLM
 - Chain of Thought prompting
 - Few-shots prompting

Chain of Thought Prompting

Input

Q: Roger has 5 tennis balls. He buys 2 more cans of tennis balls. Each can has 3 tennis balls. How many tennis balls does he have now?

A: Roger started with 5 balls. 2 cans of 3 tennis balls each is 6 tennis balls. $5 + 6 = 11$. The answer is 11.

Q: The cafeteria had 23 apples. If they used 20 to make lunch and bought 6 more, how many apples do they have?

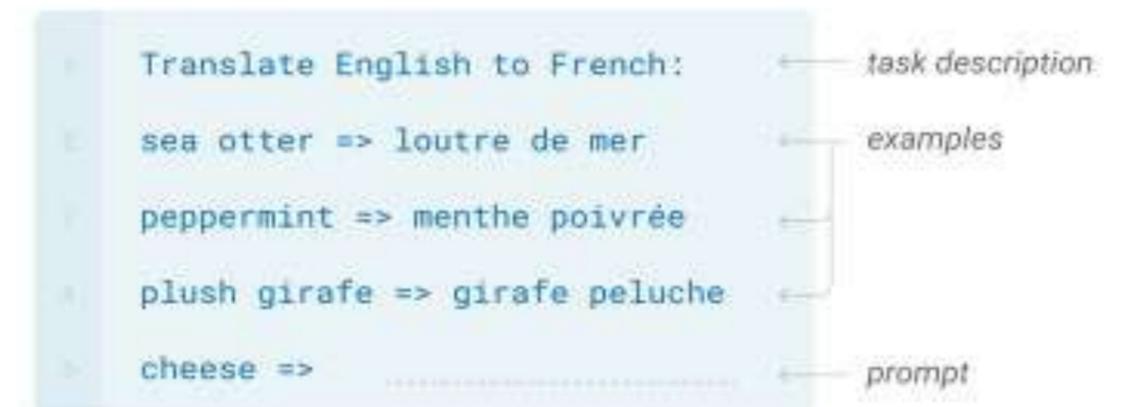
Model Output

A: The cafeteria had 23 apples originally. They used 20 to make lunch. So they had $23 - 20 = 3$. They bought 6 more apples, so they have $3 + 6 = 9$. The answer is 9. ✓

<https://arxiv.org/pdf/2201.11903.pdf>

Few-shot

In addition to the task description, the model sees a few examples of the task. No gradient updates are performed.



<https://arxiv.org/pdf/2005.14165.pdf>

More things to consider

Token limit

gpt-3.5-turbo allows 4k (or 16k) context

Response speed

It may take 1 – 60 seconds to get a response

Hallucination risk

LLM can make stuff up when it doesn't know something

Data privacy

Data sent to ChatGPT through their UI is used for their training

Chat is Not All You Need

LLM has powerful applications even without a chat interface!

Case studies

- Data cleaning / data linkage
- Unstructured data standardization
- Web scraping



Non-chat Applications



Use Case 1: Data cleaning & linkage

Name	Phone number
Adam Baker	"012345678"
Chris Jones	"01111111"

Table 1

Name	Phone	Address
Adam Baker	"+44 987654321"	Leeds
C. Jones	"+44-111-1111"	London

Table 2

Prompt:

Look at the information below:

Person 1:

Name: Chris Jones

Phone: 01111111

Residence: Unknown

Person 2:

Name: C. Jones

Phone: +44-111-1111

Residence: London

Q: Is Person 1 and Person 2 the same person?

GPT Answer:



Yes, based on the provided information, it seems likely that Person 1 and Person 2 are the same person. The similarities in the names "Chris Jones" and "C. Jones," along with the consistent phone number structure and the possibility that the "+44" in the phone number of Person 2 corresponds to an international country code, suggest that these two individuals are the same person. Additionally, the residence information in London for Person 2 aligns with the previously unknown residence of Person 1.



If scalability is an issue, you can also have LLM create the rules!

Use LLM reasoning capability

Unstructured data standardisation

The image displays 14 distinct resume templates arranged in two rows of seven. Each template is shown as a vertical document with various sections like 'About Me', 'Work Experience', 'Education', and 'Skills'. The templates vary in color schemes (e.g., blue, green, white, dark grey) and layout structures. Below each template is a small icon representing the source website and a brief title.

Source	Template Title
Novoresume	Free Resume Templ...
Canva	Free professional si...
Wikipedia	Résumé - Wikipedia
Novoresume	Resume Examples f...
Resume.io	Job winning Resum...
Resume Help	300+ Free Resume ...
resume-example.com	Resume Example - Create You...
Jobseeker	Create your professio...
Canva	Free printable resume...
Jobseeker	Create your professio...
Zety	500+ Resume Examl...
Enhancv	40+ Professional Res...
BeamJobs	5 Information Technol...
Kickresume	University Student Re...

Use Case 2: Unstructured data standardisation

CHRONOLOGICAL (HUMAN/SOCIAL SERVICE)

IM A. SAMPLE X

3083 North South Street, Apt. A-1
Grand Island, Nebraska 68803

(308) 308-3083
imasample10@xxxx.net

OBJECTIVE

Seeking Position in Human/Social Service Administration or related field utilizing strong academic background, experience and excellent interpersonal skills

EDUCATION

- BS in Human & Social Service Administration**, Bellevue University, Bellevue, NE (Jan 20xx)
 - Dean's Scholar
 - GPA: 3.81/4.00
- AAS in Human Services (Dec 19xx), 75-Hr Basic Nursing Assistant Program (Jan 20xx)**
Central Community College—Hastings Campus, Hastings, NE

WORK HISTORY

- Day Rehabilitation Specialist**, Greater NE Goodwill Industries, Grand Island, NE (June 20xx – Present)
 - Manage a caseload of twenty consumers, assist them in setting and reaching individual plans
 - Facilitate group sessions on Mental Illness, Stress Management and Healthy Relationships
 - Plan and implement social activities for consumers
 - Coordinate and conduct team meetings
 - Process billings, manage petty cash fund, and oversee operations in supervisor's absence
- Assistant Receptionist**, Tiffany Square Care Center, Grand Island, NE (Jan – June 20xx)
 - Arranged and facilitated weekend activities for residents
 - Contacted families to set up dates and times to review and discuss care plans
 - Delivered and read mail to residents, providing companionship and social interaction
 - Filed confidential paperwork and provided receptionist/administrative support for the Center
- Employment Trainer**, Central NE Goodwill Industries, Grand Island, NE (Aug 19xx – May 20xx)
 - Managed a caseload of twenty consumers and provided on-the-job coaching to help them succeed
 - Conducted group job search training sessions and assisted consumers with completion of job applications, cover letters and resumes
- Criminal Justice/Shelter Advocate**, Crisis Center Inc & Family Violence Coalition, Grand Island, NE (July 20xx – Oct 20xx)
 - Responded to crisis calls and provided support to victims of domestic abuse
 - Completed paperwork to document circumstances surrounding alleged abuse for judicial review
- Social Services Assistant**, Tiffany Square Care Center, Grand Island, NE (Jan 20xx – Sept 20xx)
 - Conducted tours, provided orientation and general assistance for new residents
 - Completed social histories, inventoried clothing, and met one-on-one with residents to help them understand their rights and responsibilities
 - Assisted the Center in meeting critical staffing needs during peak times by working as a certified nursing assistant, dietary aide, receptionist and van driver

COMMUNITY SERVICE

- Volunteer**, Women's Health Services, Grand Island, NE (Fall 20xx – present)
 - Assisted professional staff and participated in one-on-one discussions with women seeking advice on health-related issues
 - Observed group training sessions to develop the skills needed to facilitate groups in the future

Syft uses **AI** to supercharge your candidate search

Discover the features that will have you hiring in record time. Syft integrates directly into your ATS or CRM so you don't need to change your existing tools and workflows!

Result



```

conversations.add_message(
  role="system",
  content="""
  You are a helpful assistant that parses a raw resume into a structured format.
  YOU MUST leave the fields blank if they are not present in the resume.
  """,
)
conversations.add_message(
  role="user",
  content="""
  John Doe
  Front End Web Developer
  Leeds
  Work Experience
  Contract Front End Web Developer
  December 2019 to March 2020
  At Google, I was employed to work as part of a small team of developers to complete
  with a tight deadline.
  ...
  """,
)
conversations.add_message(
  role="assistant",
  content="""
  {
    "name": "John Doe",
    "location": "Leeds",
    "title": "Front End Web Developer",
    "work_experience": [
      {
        "company": "Google",
        "position": "Front End Web Developer",
        "start_date": "December 2019",
        "end_date": "March 2020",
        "description": "At Google, I was employed to work as part of a small team
  """
)
conversations.add_message(role="user", content=raw_resume)
  
```

Few shots prompting

```

y
---
name: 'IM A . SAMPLE X'

phoneNumbers:
- '308-308-3083'

websites:
- ''

emails:
- 'imasample10@xxxx.net'

dateOfBirth: ''

addresses:
- street: '3083 North South Street, Apt. A -1'
  city: 'Grand Island'
  state: 'Nebraska'
  zip: '68803'
  country: ''

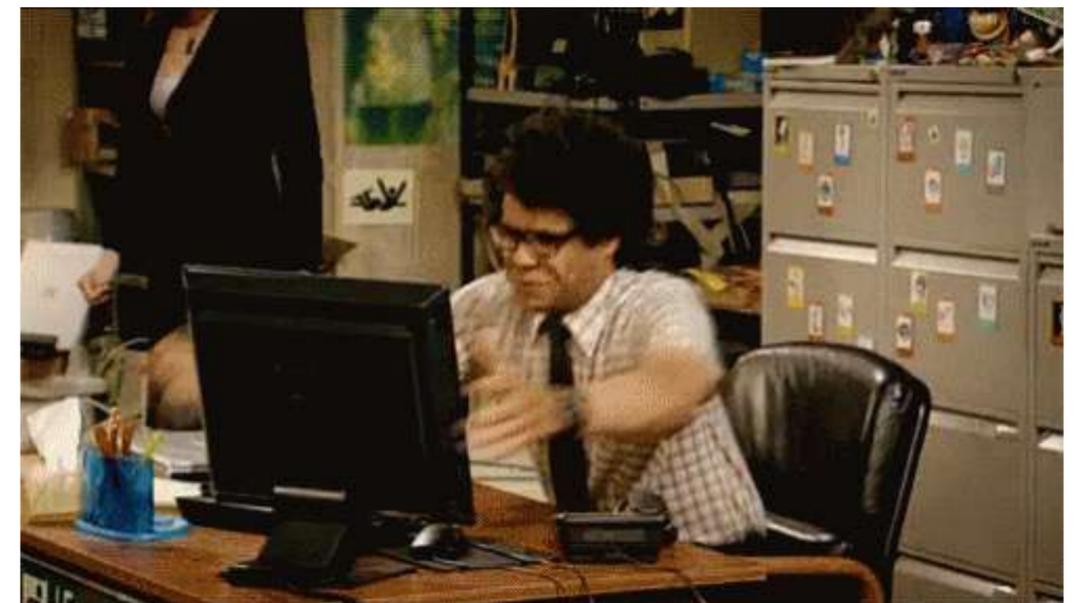
summary: 'Seeking Position in Human/Social Service Administration or r
field utilizing strong academic background, experience and excellent
interpersonal skills'
  
```

Use Case 3: LLM-powered Web Scraping

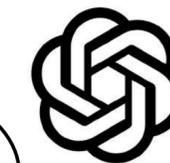
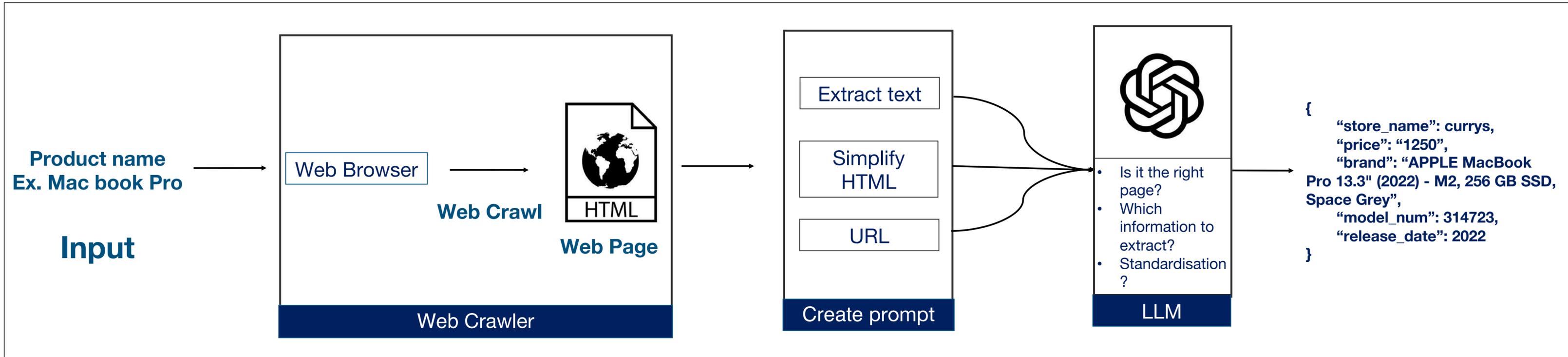
Before scraping you need to...

- Identify web sites you want to scrape
- Create a custom-code to scrape information from that website
- Create a post processing to standardise the extracted information

And if the website updates, you need to
re-do the custom-code!



Implementing LLM-powered Web Scraping system



Automatically crawl, scrape, and populate

Target: Mac book Pro

Website	URL	Price	Brand	Model #	Release date
??	??	???	???	???	???
??	??	???	???	???	???
??	??	???	???	???	???
??	??	???	???	???	???
??	??	???	???	???	???

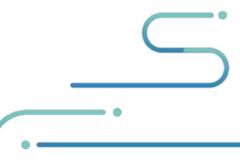
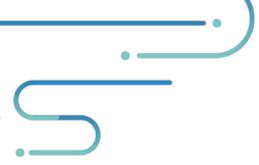
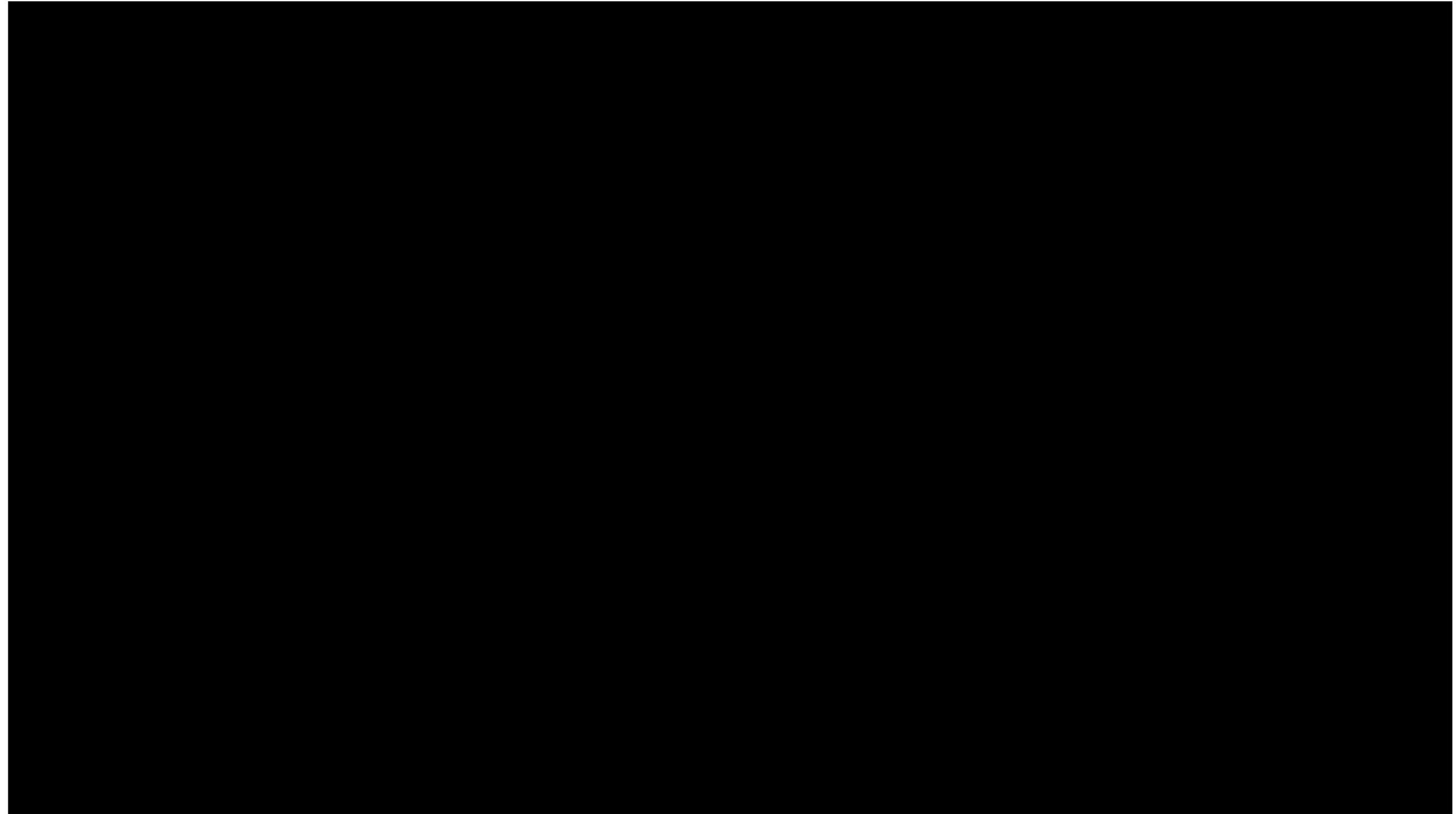
Target: Mac book Pro

Website	URL	Price	Brand	Model #	Release date
Amazon.co.uk	https://www.ama	£3,049.97	Apple 2023 Ma	null	1/24/2023
??	??	???	???	???	???
??	??	???	???	???	???
??	??	???	???	???	???
??	??	???	???	???	???

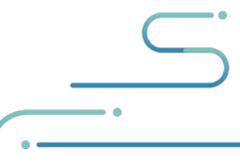
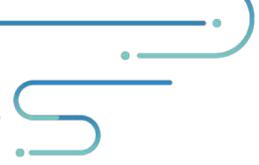
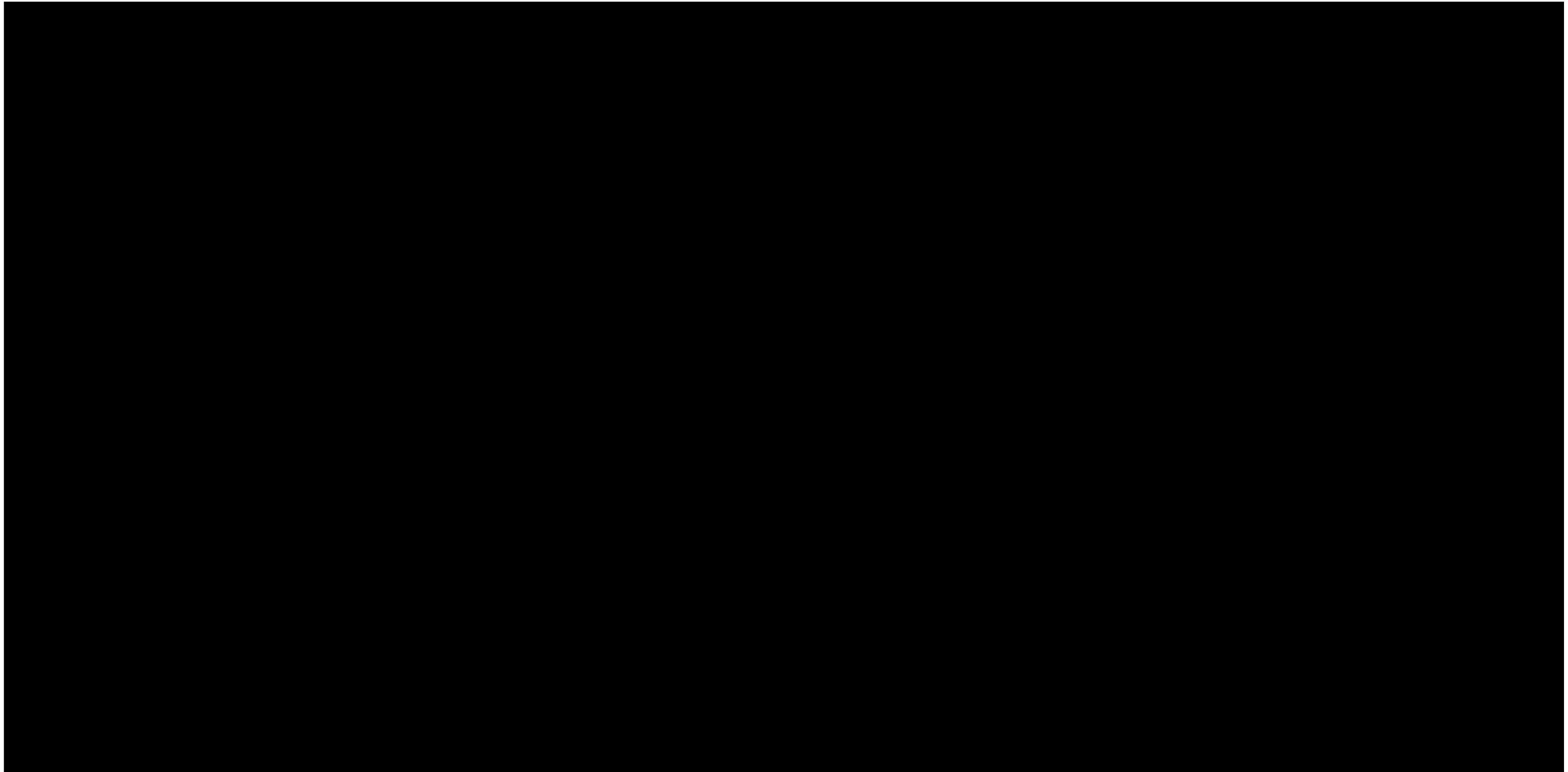
Demo – LLM-powered Web Scraper



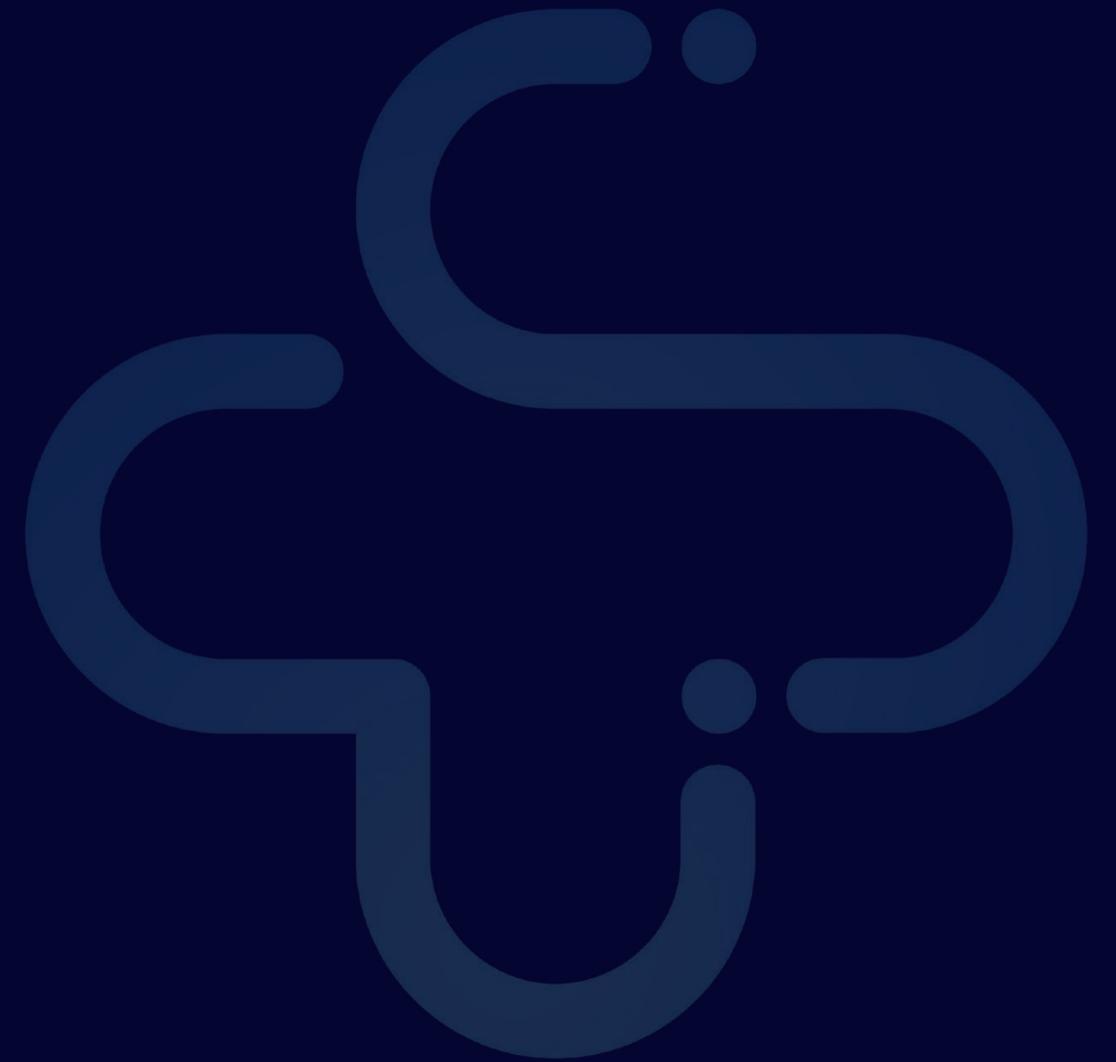
Researching products in a traditional way



Automated product research with LLM powered web scraper



Tips & Final Thoughts



Variables to consider for LLM products

User literacy

Accuracy

Real-time?

Security requirements

Budget

Use case well defined?

Important to explore different UX for LLM products

Things to consider

- Do I really need to use LLM?
- GPU shortage
- LLM is a component not a solution
- Consider caching or traditional methods
- Fight the temptation!

Things to consider

- Do I really need to use LLM?
- GPU shortage
- LLM is a component not a solution
- Consider caching or traditional methods
- Fight the temptation!

LLM is still in “development”

The only way to learn is by building!

Reo Ogusu

Thank you!



reo@seeai.co.uk



Ogureo



@ogureo



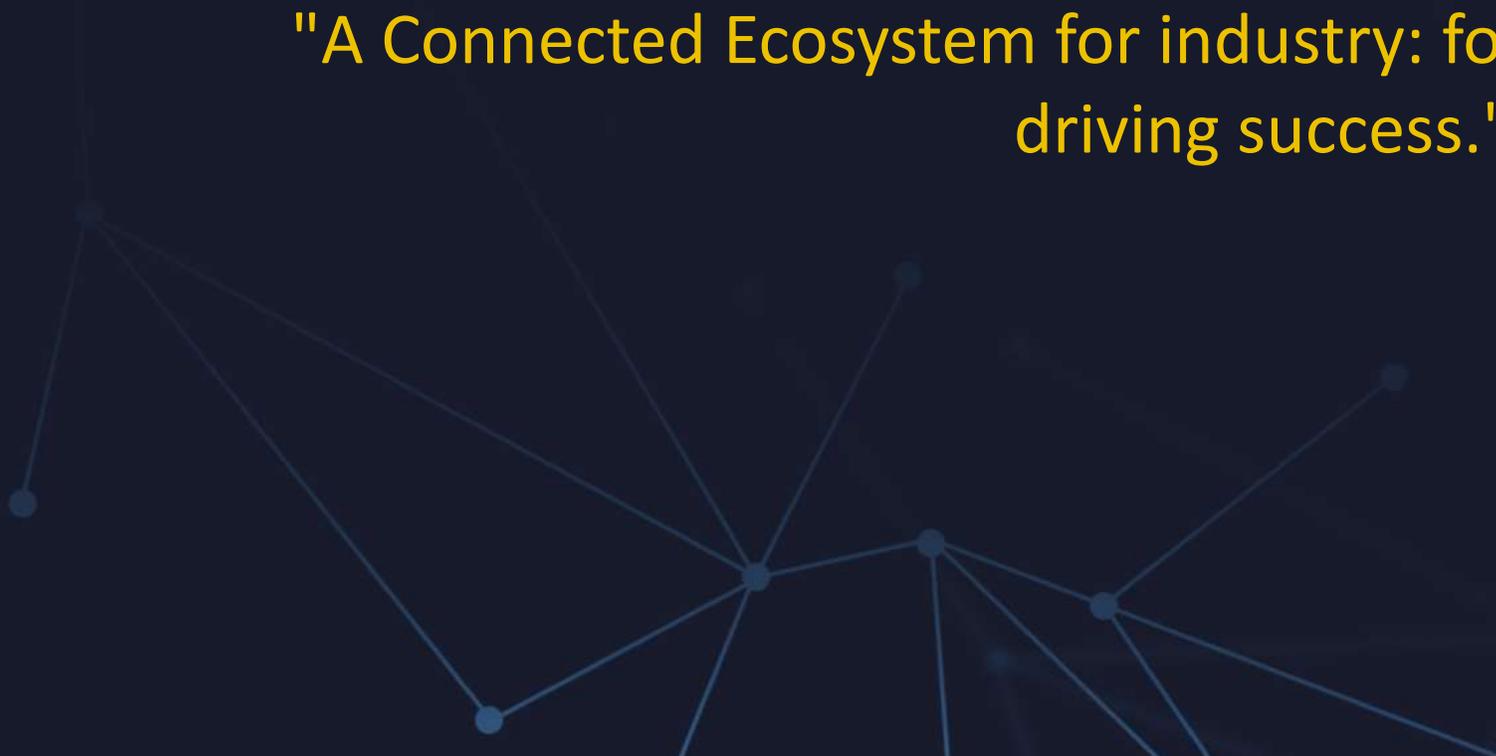
valuechain

NETWORK PORTAL



Our Vision

"A Connected Ecosystem for industry: fostering partnerships and driving success."



Who is it for ?



Clusters &
Associations



SMEs



Technology
Providers

Clusters

- Transform from a static directory to an **interactive and engaging platform**
- **Connect, collaborate and improve** together across sectors by connecting with **cross-domain clusters**
- Offer exclusive content and updates to their members
 - Regular newsfeeds
 - **Industry insights**
 - Training webinars
 - **Tenders & opportunities**
- Enhance **engagement, impact, visibility** and **opportunities** for clusters and their members based on capabilities capacities and components, leading to business matchmaking and alignment to funding, tenders, grants and collaborations.
- Full analytic integration into the involvement of your members across the platform leading to comprehensive insight into KPI delivery.

“

“We have mapped the additive manufacturing community across the UK using Valuechain’s Network Portal. It helps us manage our community, and make it visible and accessible. Being able to engage the industry directly, in this targeted and industry-specific environment is incredibly beneficial.”

Joshua Dugdale
Head of Additive Manufacturing UK

”

Industry Pain points

Unknown Capability

Not what they do at the moment but what they CAN DO

Lacking Resources

many multinational companies are immersed in a crisis: the lack of various resources

Potential discovery

Potential discovery is key to business innovation



Innovation difficulty

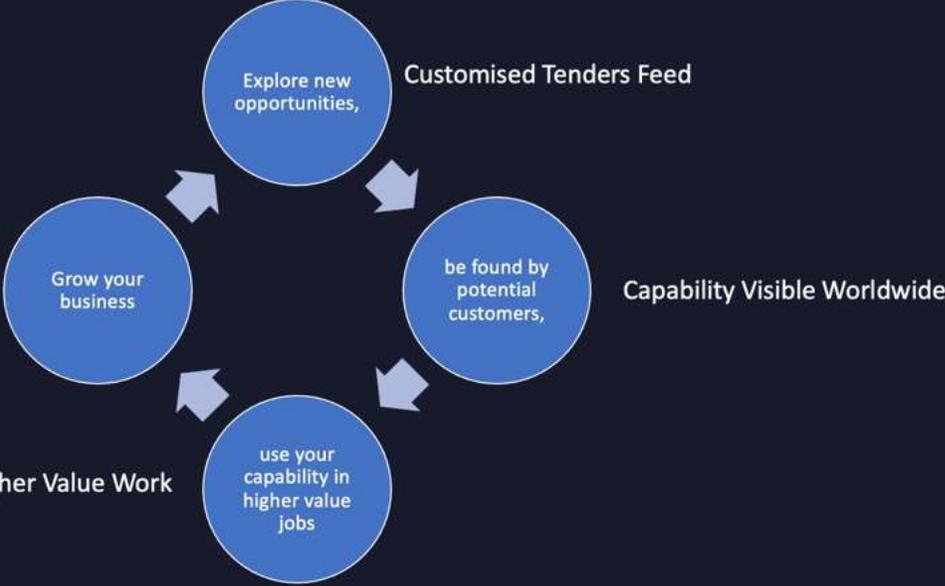
only 6% of executives are actually satisfied with their innovation performance.(source: McKinsey)

Multidisciplinary Challenge

Communication usually became the biggest challenge for businesses transboundary

Collaboration

Collaboration also can be costly and time-consuming



Value Proposition

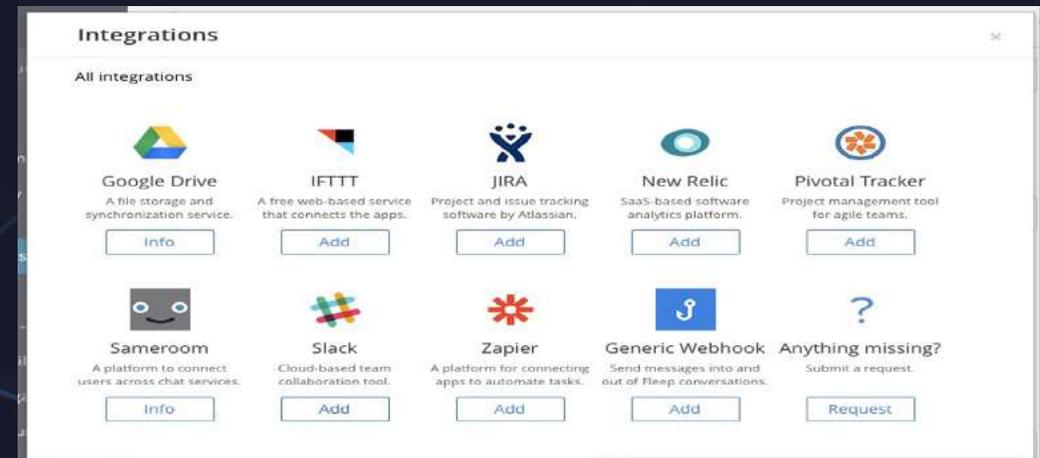
SMEs

- Connect with other **SMEs members**, associations and clusters to build valuable partnerships
- Access exclusive content and updates, including training webinars, **industry insights**, and regular **newsfeeds**
- Enhance **visibility** and **opportunities** to grow your business through increased **engagement** and **collaboration**
- Improve **business performance** and **competitiveness** through access to a comprehensive platform that provides valuable resources and connections
- Find **project partner** based on similar or **complementary capability**

Tech Solution providers

Target beneficiary group of **tech start-ups**, and **scaleups**, including some who are already aware and others who don't yet know the supply chain landscape and potential **growth opportunities** in relation to it.

- Offer your technology solutions to a community of users who are actively looking for solutions to enhance their businesses
- Seamless **API integration** to connect to platform
- Increase brand visibility and recognition as a trusted technology provider



Why do we believe there is value in building a connected ecosystem of clusters in Supply chain & Manufacturing ?

For industry...

Our approach is unlike a traditional marketplace and different to what is available in the market currently

- **Enabling the creation of 'on-demand' supply chains**
 - Providing agility to address emerging market opportunity
 - Net Zero, Reshoring, Circular economy, Levelling Up
 - E.g. Hydrogen, BMW battery Boxes, Olympics, Londesborough
- **Rapid reconfigure of existing supply chains**
 - Responding to disruption from external forces (e.g. Pandemic, Suez canal closure)
 - Helping to address risk, resilience & localised supply
 - E.g. Toilet modules, Big Press Capacity, Black swan events
- **Open application framework & open business model**
 - Innovative open technology approach
 - Enabling the key element of success - open business models
- **Bringing together industry participants**
 - Tenders and manufacturing capability (SMEs suppliers)
 - UK IT companies with automated value add tools (apps)
- **The opportunity to identify capability gaps in UK supply base**
 - Gaps can then be research funded, or targeted with overseas companies with the right capability
 - E.g. Singapore government research arm (A*Star)
- **Projected adoption and use cases**
 - The Gear and Tooling Manufacturers association
 - The Offshore Wind association
 - The Welsh Automotive forum

Super Cluster



Networks / Cluster/Groups



Companies

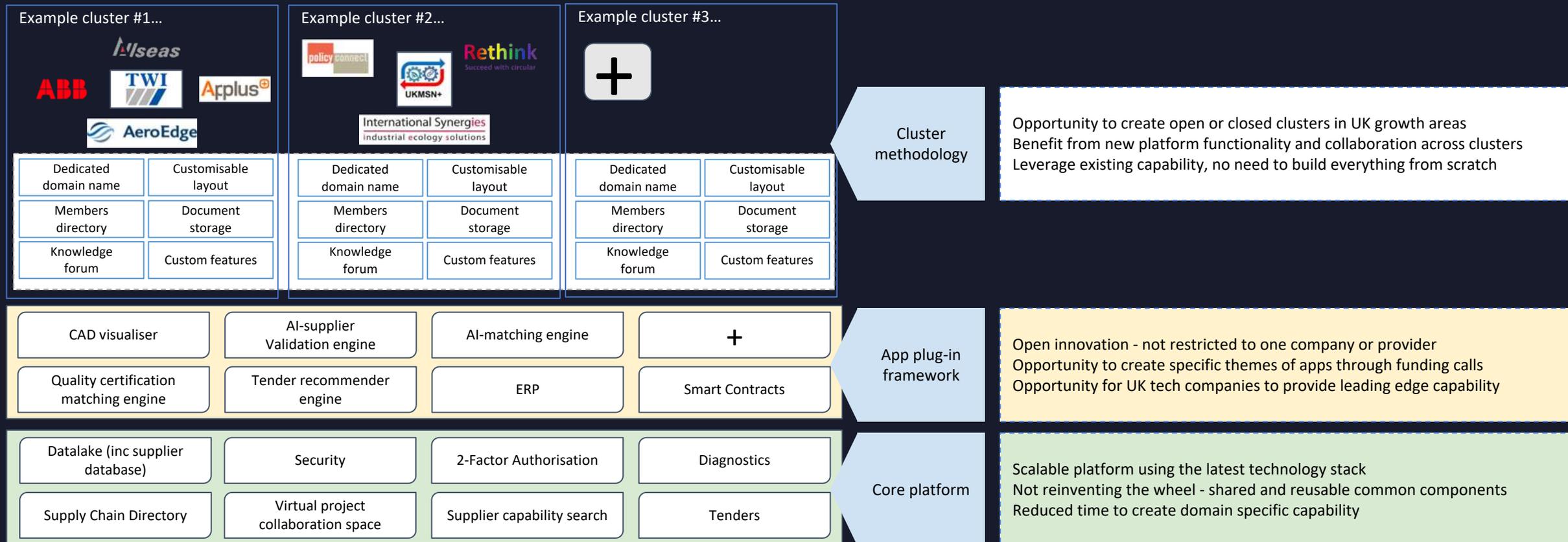


People/ Users



A Digital Ecosystem

A scalable, sustainable and innovative approach



Our Ambition to improve

Ventilator Challenge – lost £143m of Public Money

Societal – Technology – Black Swan
Driving Faster Change

The companies looking to supply the NHS with ventilators

✓ Going ahead		⚪ Being reassessed		✗ Not required	
Ventilator	Maker	Ventilator	Maker	Ventilator	Maker
Penlon Prima EOS2	Penlon (Ventilator Challenge UK)	CoVent	Dyson/TTP	Project BlueSky	Darwood IP/ Renault/Aston Martin Red Bull
ParaPac	Smiths Medical (Ventilator Challenge UK)	AirCare	BAE Systems	Helix	Diamedica/ Plexus
Nippy 4+	Breas Medical	Piran Vent	Swagelok	EVA	TEAM/Cogent Technology
Nippy Vivo 6S	Breas Medical	Veloci-Vent	Cambridge Consultants/ MetLase	OxVent	Oxford University/KCL/ Smith & Nephew
Zephyr Plus	Babcock/ Draeger			inVicto	JFD
Gemini	OES Medical			Sagentia Ventilator	Sagentia

Guardian graphic

Today's Ventilator Challenges

1. Hydrogen Economy Supply Base
2. Electric Vehicles Supply Base
3. Electric Charging Infrastructure
4. Micromobility
5. Light Rail
6. Green Economy
7. Reshoring

Growth / Innovation / Competitiveness / Resilience

- The ability to build a supply base 'on demand' that can be quickly configured to address the challenges of **Net Zero**, **Reshoring**, new markets (such as **Hydrogen**), **Circular economy** and the increasing number of black swan events.
- The ability to quickly reconfigure the supply chain as objectives change (speed, CO₂, capacity) or disruptions occur.
- Improved supply chain visibility and automated monitoring of signatures to reduce disruption losses.
- Create new capability e.g. Railway Manufacturers toilet modules use case
- Quickly segment and structure the marketplace capability database for needs of new markets such as **light rail**, **micromobility**, medical devices, electric vehicles. E.g. BMW use case
- Using ecosystem for identifying capability gaps within the UK supply base. E.g. Singapore government research arm (A* Star) use case

Current traction

- 61 associations onboard and 6800+ manufacturing companies in 10 months.
- Valuechain has secured a contract with ADS to provide an Appstore and marketplace for the UK's aerospace SME digitalization program as part of FTL's SC21 program.
- Valuechain is in contention for selection by the UK government's Digital Supply Innovation Hub as the country's collaboration and intelligence platform.
- Valuechain is working on an EU-funded collaborative project aimed at developing the world's first app-store focused on enhancing SME manufacturing productivity.
- Valuechain is an official partner of Edge Digital, powering their Digital Assessment app.
- **We have won a project officially to build SUPPLY CHAIN resilience tool on network portal in partnership with Warwick Manufacturing Group & Digital Supply chain hub**

Use-Case Example



Regional Development Agency driven project



No local supplier of toilet modules, but Identified process and skill requirements



Use network portal to identify possible partners to address opportunity

Required Processes
CNC laser cutting
Bending (Sheet metal)
Tube bending
Injection Moulding



Use network portal to create a new cluster, Build prototype for customer

Our Offering

SME Free

- Basic profile creation
- Basic communication and messaging functionality for connecting with other members
- Access to industry-specific news and updates
- Connect to up-to 2 additional open clusters
- Limited access to tenders and other business opportunities

SME+ £99/m

- Connect to up-to 10 additional open clusters
- Ability to request membership and join up-to 5 closed clusters
- Advanced search functionality,
- Access to the AI recommendation engine for finding relevant networks, members to connect to, tenders and more intelligent recommendations.
- The ability to receive notifications when new tenders are posted that match your company's criteria.
- Priority access to support and customer service.

Enterprise Contact us

Everything in SME+

- On Demand Supply Chain creation
 - Supply Chain Resilience Mapping
- And more ..

Cluster

£499/m

- Upload and manage a directory of members
- the ability to communicate with other association
- The ability to post and bid on tenders,
- Get new member request through the platform
- Custom branded front page for the association



Click for
brochure