

The Telegraph

Understanding Recommender Systems

Hervé Schnegg



The Daily Telegraph

NEWS BRIEFING

Icy Storm Emma joins forces with the Beast

The country has been warned to expect another day of snow chaos as two weather systems - the Blast from the East and Storm Emma - collided bringing blizzards, icebursts, howling rain and gale force winds. Following the Met Office's first red weather alert in five years yesterday, I warned today could become England's coldest March day on record, with temperatures set to fall below the 20th (-5.3C) recorded in Caithness in 1995.

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High street brands close to collapse

A trio of high street names are close to collapse, as Toys 'R Us and Magsim both called in administrators, while the restaurant chain Prezzo announced plans to close a third of its outlets. Toys 'R Us UK appointed Moorfields Advisory as administrator to wind down the stores, putting 3,000 jobs at risk, while Pret will benefit Magsim, which employs 2,500 people. Sources suggested more than 100 Prezzo restaurants could be closed. *Business, page 3*

Iran angers Israel with Syria missile base

Satellite images reportedly show that Iran has established a base outside of Damascus to house missiles capable of hitting Israel, causing a "red line" for the Israeli government as it struggles to stop Iranian entrenchment in Syria. Images appear to show a pair of newly built missile hangars on the base, which strongly resemble hangars at another Iranian compound that Israel bombed last year.

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Weather 25
100-100-100

Remainers try to stop Brexit with 'proxy war'

Boris allies say Irish issue is being exploited as Major pines for prospect of new referendum

[illegible]

5 Mosley faces police investigation

By Hayley Watson and Kate McCann

MAX MOSLEY is facing a serious investigation, it emerged last night, as Labour's former deputy leader. The 42-year-old has been denied the party's Scotland Yard confirmed it was assisting a former deputy of Mr Mosley's links to a racist pamphlet handed to investigators by the Crown Prosecution Service. A decade ago Mr Mosley said

one of the leaflets and dismissed as "obscure nonsense" reports that it claimed "coloured immigrants" spread disease. Last night he maintained he did not recall the pamphlet, but said he had seen it in his publisher, and said he was surprised that he felt under such a "disreputable misnomer".

After the document emerged, the Labour Party, whose deputy leader Tony Watson received 2,640,000 votes in the 1997 election, said it would not

accept his donation. Mr Mosley said in an interview on Tuesday, "I would continue to make payments to the party."

While insisting that the copies were "not for sale" to the public, he said he would not "voluntarily" change their spokesperson for Jeremy Corbyn, a socialist member of the Labour Party, who said the leaflet was "totally racist".

The spokesman continued that he believed there will be any further action.

Markle urges women to feel empowered



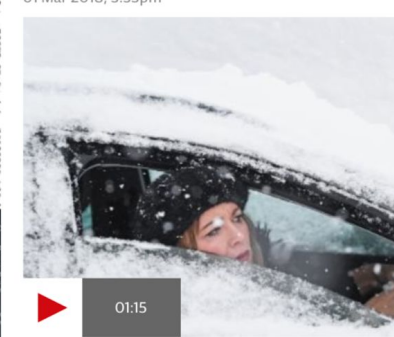
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UK weather chaos Red 'danger' alert extended amid gas shortage Storm Emma meets 'Beast from the East'

01 Mar 2018, 3:35pm



01:15

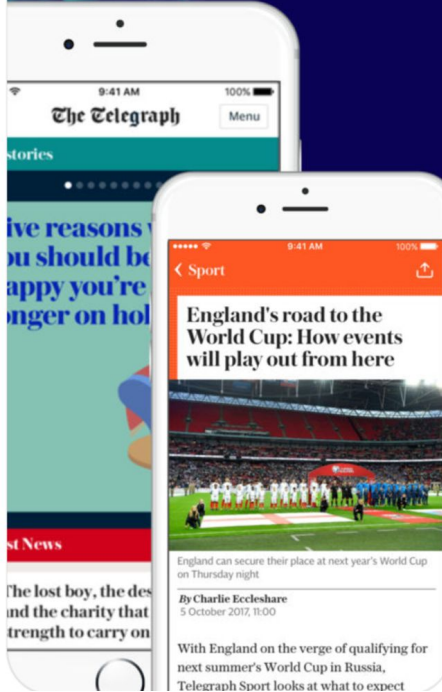
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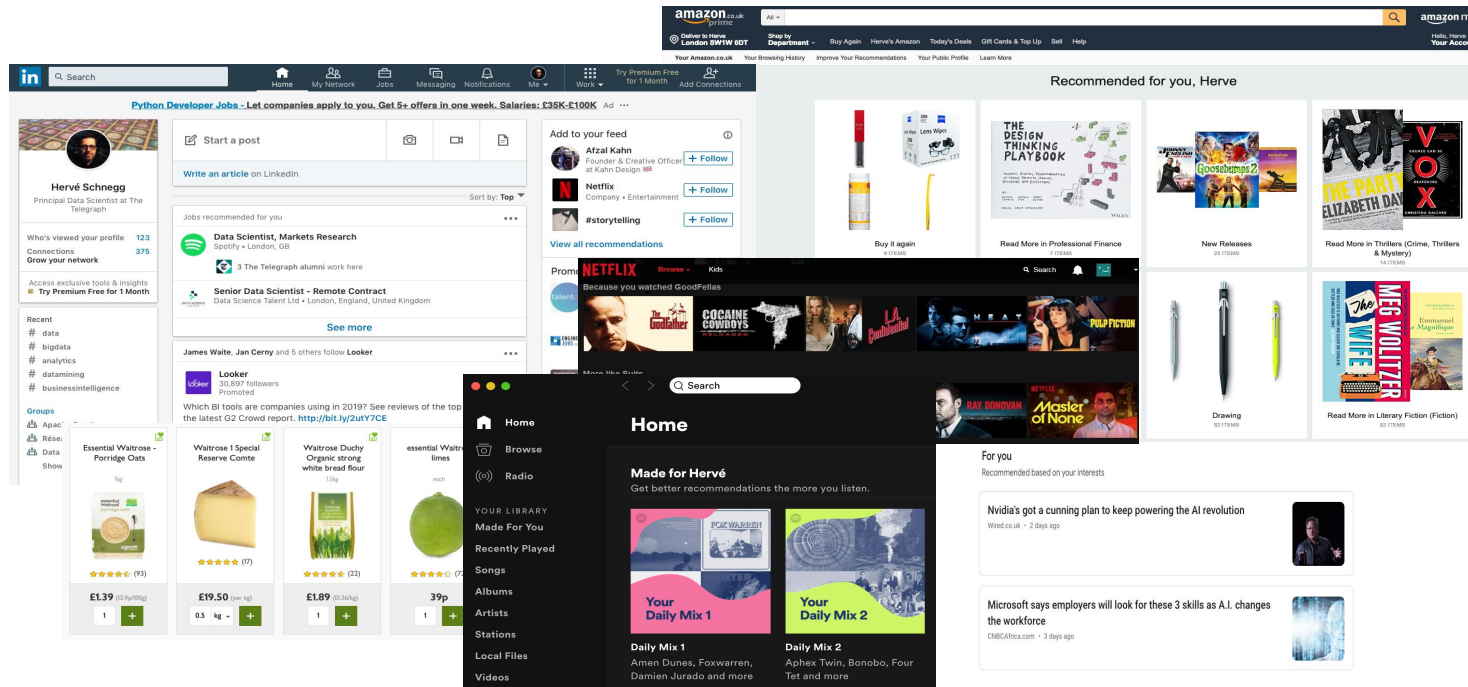
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Recommender Systems Are Everywhere

The Telegraph



75% **NETFLIX**

amazon 35%

The Amazon logo, featuring the word "amazon" in a bold, black, sans-serif font, with a curved orange arrow underneath it pointing from the letter 'a' to the letter 'z'.

“Already, 35 percent of what consumers purchase on Amazon and 75 percent of what they watch on Netflix come from product recommendations based on such algorithms.”

Source: [How retailers can keep up with consumers](#), McKinsey & Company, 2013

“An **echo chamber** is a metaphorical description of a situation in which beliefs are amplified or reinforced by communication and repetition inside a closed system. By visiting an echo chamber, people are able to seek out information which reinforces their existing views.”

Source: [Echo chamber \(media\)](#), Wikipedia

“A **filter bubble** is a state of intellectual isolation that can result from personalized searches when a website algorithm selectively guesses what information a user would like to see based on information about the user, such as location, past click-behavior and search history.”

Source: [Filter bubble](#), Wikipedia

Approaches To Content Recommendation

Collaborative filtering
“People like you...”

User	Story 1	Story 2	Story 3	Story 4
1	x	x		x
2	x	x		
3	x	x	x	
4		x	x	x

amazon

Customers who viewed this item also viewed



Content based
“Related content...”

The New York Times

Cannes, Where Weinstein Reigned, Reckons With #MeToo Fallout

“I’m super-enthusiastic, because the other way of looking at things is that everything remains to be done,” Ms. Husson said. “A golden era could now begin. We must seize the moment.”

Matthew Anderson contributed reporting.

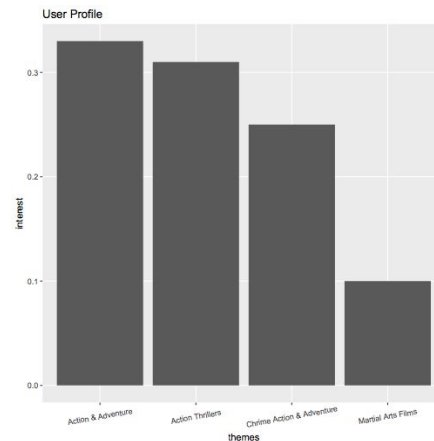


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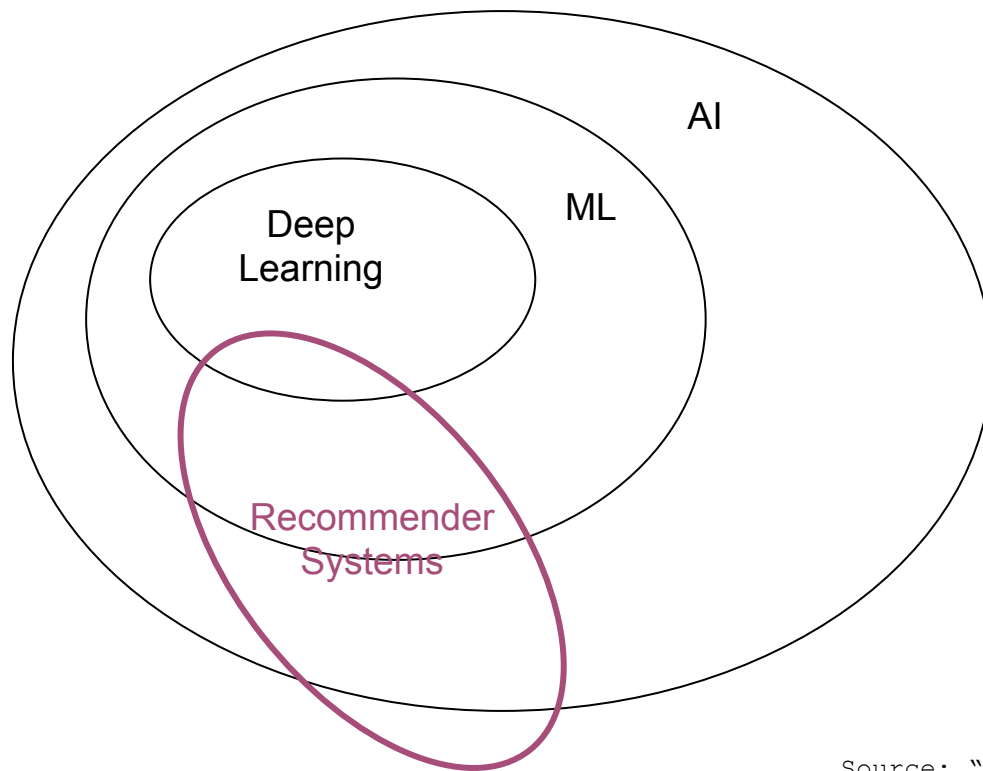
SHOW ALL

User profile
“Based on your preferences...”



NETFLIX





Source: "Deep Learning",
Ian Goodfellow and Yoshua Bengio and Aaron Courville,
MIT Press, 2016

They all work differently

They are promoting different behaviours

They should be selected based on the **type of content**, the **user journey** and **our objectives**

So, What Do We Need?

Engage our readers

Help them find relevant content

Offer them a personalised experience

Guide them to content with a higher commercial value

Accuracy	Are users visiting the recommended pages
Diversity	Intra - how different are the N recommended articles, Temporal - do I see different recommendations when I come back
Novelty	Had the user seen the recommended pages before
Coverage	Percentage of article ever recommended Percentage of users for which a recommendation can be made
Serendipity	Recommendations are unexpected and useful

Source: "Predicting Online Performance of News Recommender Systems Through Richer Evaluation Metrics", A Maksai, F Garcin, B Faltings, Proceedings of the 9th ACM Conference on Recommender Systems, 2015

Where Are We Going?

The Internet of Me?

The Telegraph

“If we have 4.5 million customers,
we shouldn’t have one store. We
should have 4.5 million stores”

Bezos

VS.

“A squirrel dying in your front yard
may be more relevant to your
interests right now than people
dying in Africa”

Zuckerberg

Convenience of commerce sites
knowing my habits

VS.

Role of the media
Risk of the filter bubbles

Thank you!

@herveschnegg

