

Generative AI for Regulatory Analysis

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AI at Nimonik

About Us

Founded in 2008 with offices in Montréal, Calgary, Toronto, and Shanghai.

Nimonik services over 700 customers around the world, especially mid-size international companies.



Canadian Integrations

Companies you may have worked with:

- ConformanceCheck (Toronto)
- MediaLogic (Calgary)
- Templegate (Toronto)

They are all now part of Nimonik!

Nimonik will soon be offering access to standards from CSA and other standard development organizations.



We are not ~~EHS management software or just a content provider or simply an audit tool.~~

Nimonik is an integrated compliance solution for regulations, standards and internal requirements.



Road to Compliance Maturity

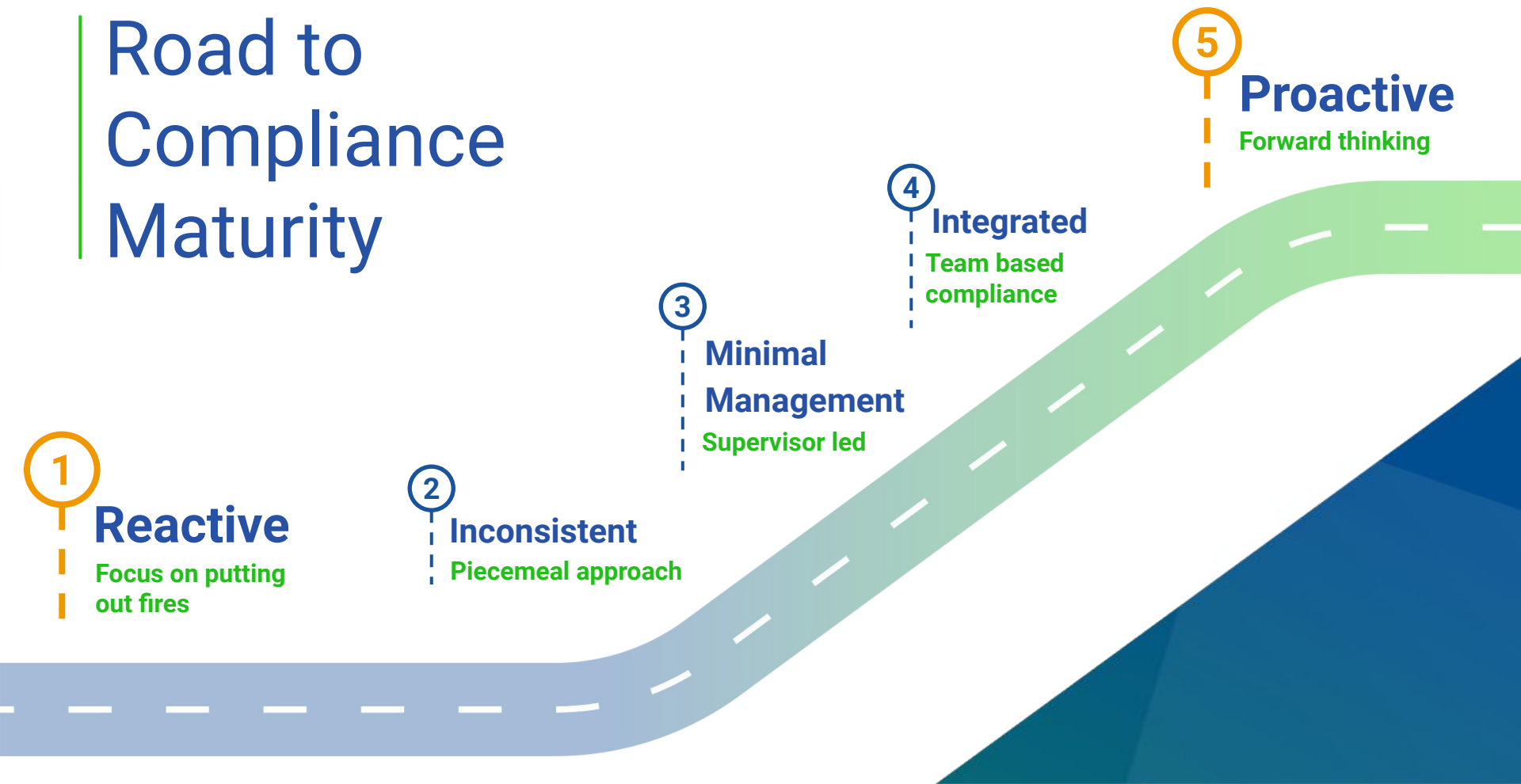
1
Reactive
Focus on putting out fires

2
Inconsistent
Piecemeal approach

3
Minimal Management
Supervisor led

4
Integrated
Team based compliance

5
Proactive
Forward thinking



Surprises abound

Most organisations do not know all of their obligations, leading to “surprises”...

Across various topics (EHS, Quality, HR, safety,...) a typical factory **3,000+ obligations and 200+ changes per year.**

Each non-compliance costs \$5,000+ in internal costs.

Frequency of change 3x

Regulatory change has increased 3x in five years.

Organizations have not increased staff or updated processes to manage regulatory change.

The Four Pillars of Compliance

IMPACT

Prevention

Risk profile
Historicals
Monitoring

1

Detection

Early detection
Self-reporting
Internal Audits

2

Response

Fast response
Data analysis
Action plans

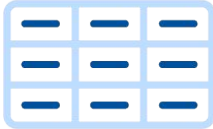
3

Correction

Actions
Corrective
Effectiveness

4

Resilience



Comprehensive Obligations

- 360° Coverage
- Obligations mapped to systems




Comprehensive Assurance

- Audit ready
- Actions tracked



Business Outcomes

- Increased trust
- Fewer surprises



The main hurdle to identifying requirements is understanding:

what a document regulates,
how it regulates and
who it applies to.

Traditional Approaches



In-house

- Hiring, training, support
- Good knowledge of operations



Consultants

- Robust knowledge



Enterprise Software

- Consistent across organization
- Corporate control

Time



Cost &
inconsistent



More cost and
complexity



A Comprehensive Compliance program captures all of your **Obligations** across your **areas of compliance**:



...and **Sources**:

Regulatory + standards

+ ECAs, permits, stakeholders,
customers,...



Nimonik software workflow

Nimonik Inc. offers an integrated compliance management program for organizations to better manage their obligations across quality, environmental, safety, privacy, human resources, and other regulated areas.



Nimonik helps you achieve compliance across your operations and increase your organization's resilience.

The challenge of the decentralized approach is that most organizations delegate this work to various parts of the business - who each take their own approach.

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AI at Nimonik

Definition

Generative AI is a type of Artificial Intelligence that can create unique, original content automatically - from text to images and video.

Modern generative AI uses machine learning algorithms that are trained on large amounts of data, usually Large Language Models (LLM).

Includes a random component. The same inputs can lead to different variations of the output.

About technology



“I've come up with a set of rules that describe our reactions to technologies:

1. Anything that is in the world when you're born is normal and ordinary and is just a natural part of the way the world works.
2. Anything that's invented between when you're fifteen and thirty-five is new and exciting and revolutionary and you can probably get a career in it.
3. Anything invented after you're thirty-five is against the natural order of things.”

– Douglas Adams, *The Salmon of Doubt*

Application

Identify your physical operations and outline Obligations, Actions and Audits for each location

Control access by business unit, region or facility

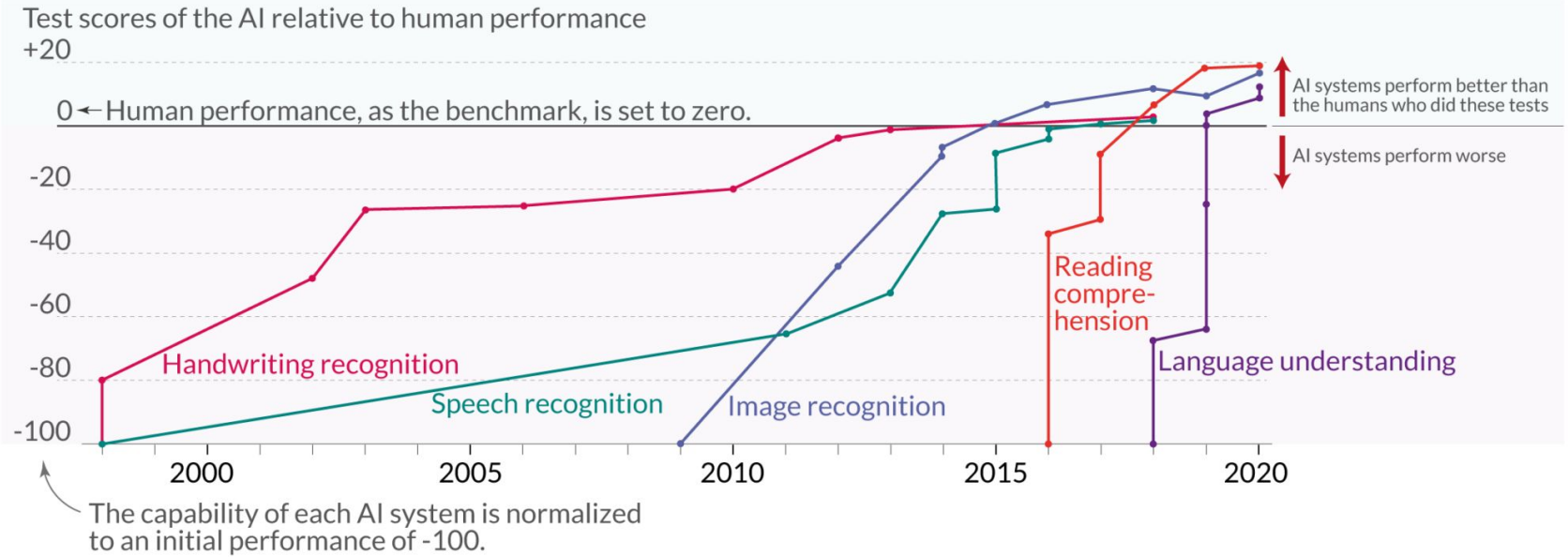
Is it safe to use ChatGPT for your task?

Aleksandr Tiulkanov | January 19, 2023



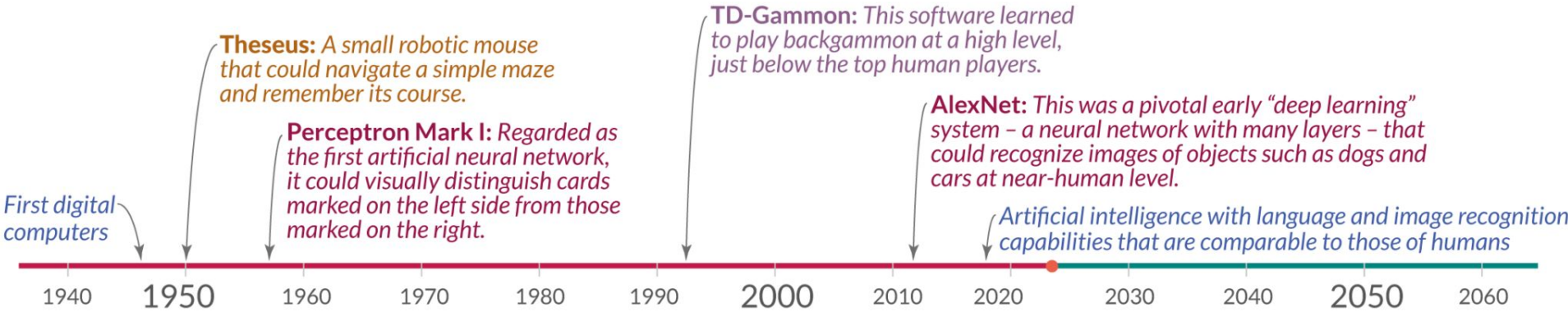
* but be sure to verify each output word and sentence for accuracy and common sense

Language and image recognition capabilities of AI systems have improved rapidly



Data source: Kiela et al. (2021) - Dynabench: Rethinking Benchmarking in NLP
OurWorldinData.org - Research and data to make progress against the world's largest problems.

A timeline of notable artificial intelligence systems





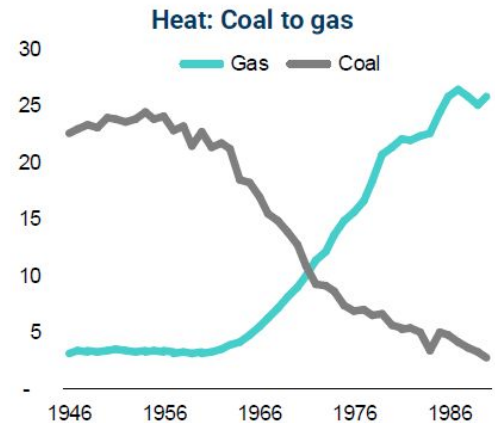
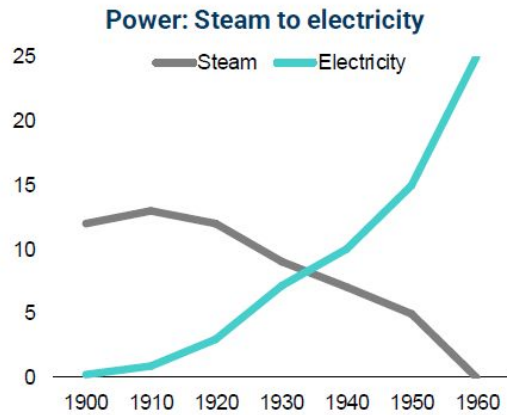
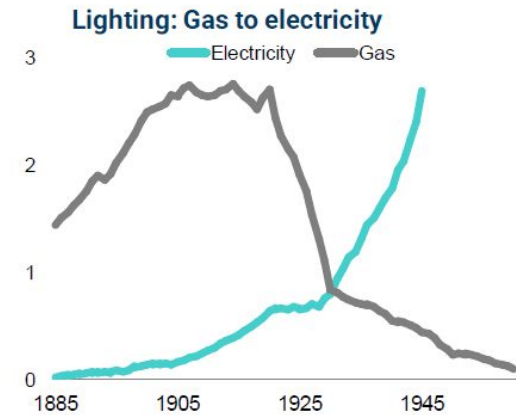
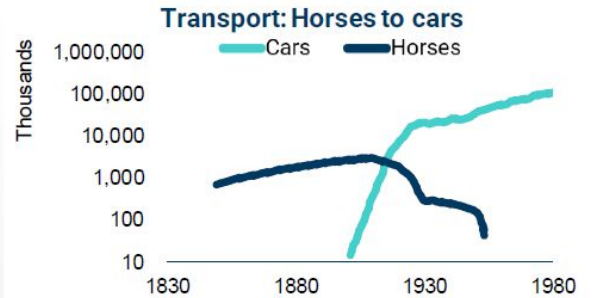
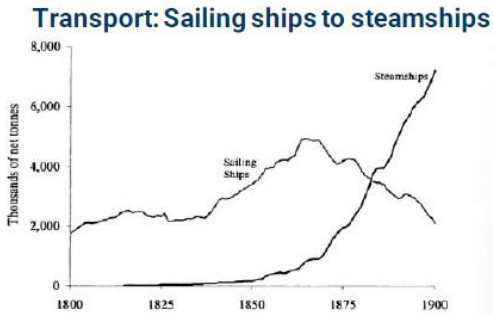
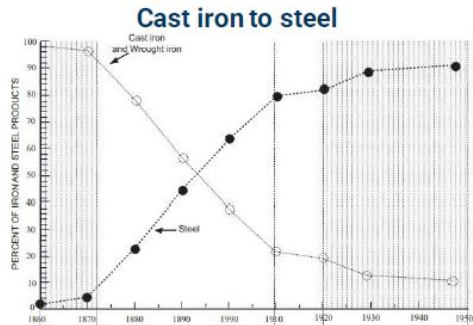
Elon Musk

@elonmusk



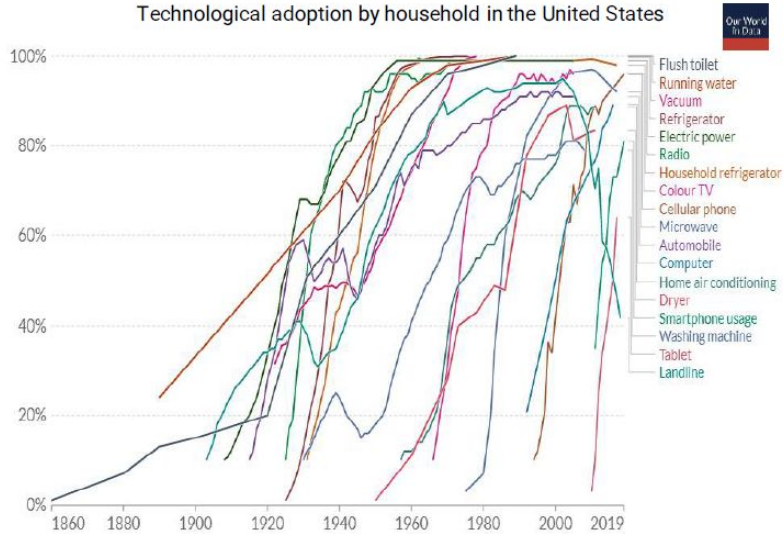
What will AI be like in 2040?





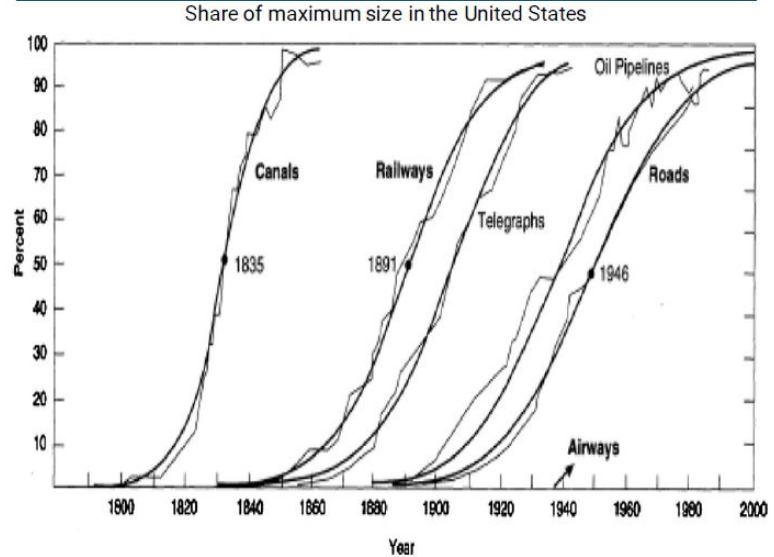
Technologies move up S-curves all the time

Individual products



Rapid exponential growth along S-curves is a standard characteristic of successful new technologies.

Infrastructure systems



S-curve-type growth even applies to infrastructure.

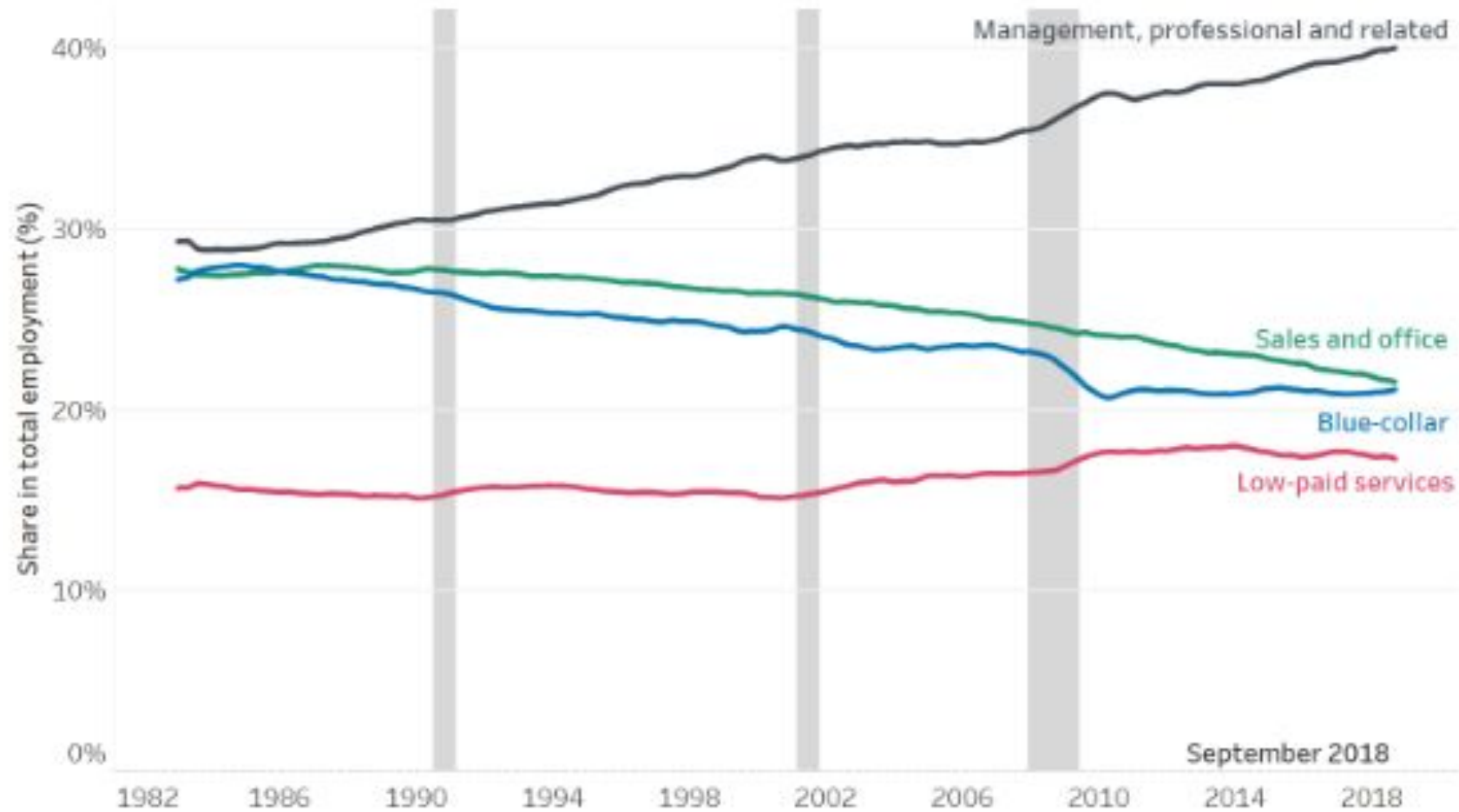
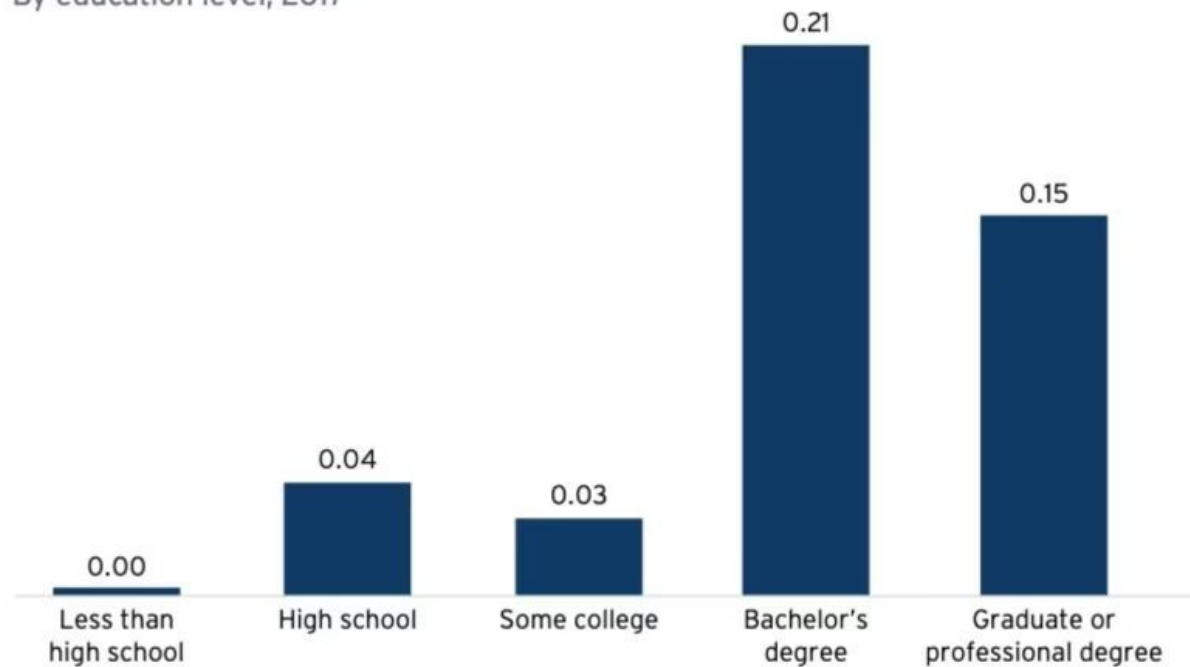


Figure 3. Average standardized AI exposure

By education level, 2017



Source: Brookings analysis of Webb (2019) and IPUMS-USA ACS 1-year microdata

Ownership

1. Open source libraries and data sets make this technology widely available.
2. Much of the regulatory analyst job will be automated. Consulting work may be affected as well.
3. Limited “moat” to offer services that are solely analysis. The “human” factor will become more important along with workflows and tools to manage data.

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AI at Nimonic

Why Nimonik leverages AI?

Nimonik collects 2,000 - 3,000 new regulatory documents per month

Number of new documents is constantly growing due to the expansion of Nimonik's coverage and increasing regulatory activity

AI tools becoming more and more essential to ensure quality and timely content delivery

How Nimonik leverages AI?

Generation of summaries

- Nimonik offers short summaries for essential documents
- This allows you to understand if a document is relevant for you
- AI analyzes and produces summaries almost instantly

AI chatbot

- Nimonik works on implementing an AI solution to securely chat about document
- This will allow you to receive instant answers to your questions about the document
- AI agent serves as your personal consultant

Identification of obligations

- Nimonik extracts obligations from essential documents
- This allows you to focus on and track only the provisions relevant for you
- AI almost instantly extracts obligations with 90%+ accuracy

Detection of relevance

- Nimonik classifies documents based on their industry sectors and topics
- This allow you to subscribe and see only the documents relevant for you
- Nimonik works on use of AI to streamline the classification process

Key takeaway about generative AI tools

While personal use is really simple and can deliver great value with almost zero effort, **business integration and use requires careful planning, testing and overcoming numerous challenges.**

Pros and cons of AI deployment need to be carefully considered.

Key challenges: Content to be processed by AI

Challenge

- AI is smart but it cannot take new content to process by itself.
- For example, OpenAI's GPTs are not able to open the links with documents and process their text without additional plugins or tools.
- Nimonik covers hundreds of jurisdictions that are differ in their content delivery approaches, content quality and accessibility.

What Nimonik does?

- Nimonik makes sure that in each case content can be correctly extracted and easily fed to the AI for summary generation and other tasks.
- To achieve this, Nimonik uses various internal and external content processing tools and techniques tailored to each jurisdiction to ensure quality content.
- ... and deals with such websites :)

me: *just opening the website*

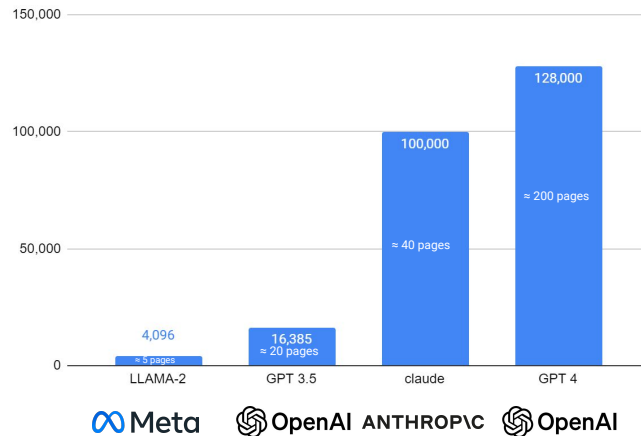
the website:



Key challenges: Content size and cost

Challenge

- All generative AI models have their limits in terms of maximum content to be processed.
- Even the most capable models are still capped at around 200 pages of content, while a lot of documents are much larger.
- Cost is also a factor for large-scale application.



What Nimonik does?

- Currently, Nimonik uses various proprietary solutions to achieve the best efficiency to cost ratio.
- Nimonik also develops own internal solution to process text larger than 150 pages based on advanced text processing techniques.
- In terms of cost, Nimonik's internal solution will be based on one of the open source LLM models that deliver results comparable to ChatGPT.

Key challenges: Security of data

Challenge

- Third-party solutions cannot guarantee privacy of your data.
- Additionally, there might be intellectual property concerns while using copyrighted content in publicly available AI tools.

What Nimonik does?

- Currently, Nimonik does not process in third-party AI tools any sensitive or copyrighted data.
- Nimonik's own internal solution will be deployed according to the best available practices to ensure data security.

Key challenges: Quality of results

Challenge

- Nimonik has high standards for documents' summaries quality that should be met by AI.
- While some prompt engineering makes the results better, they are still not always consistent in their quality and format.

What Nimonik does?

- While Nimonik already generates majority of summaries using AI tools, the results are still being reviewed by our analysts.
- Nimonik's goal is to achieve consistent and quality results by "fine-tuning" the AI model that we will use for our purposes.
- In other words, Nimonik will train AI on large number of summaries created by analysts to produce the results following the same approach.

Example: Oil and Gas Spills and Debris Liability Regulations

Input: <https://www.canlii.org/en/ca/laws/regu/sor-87-331/latest/sor-87-331.html>

Summary with general prompt

The Oil and Gas Spills and Debris Liability Regulations (SOR/87-331) fall under the Canada Oil and Gas Operations Act. These regulations were registered on June 11, 1987, and pertain to the limits of liability for spills, authorized discharges, and debris related to the exploration or production of oil and gas. The regulations were published in the Canada Gazette Part I on January 3, 1987, allowing interested persons to make representations.

No representations were made to the Minister of Energy, Mines and Resources or the Minister of Indian Affairs and Northern Development. Consequently, the Governor General in Council, on the recommendation of the aforementioned ministers, made the annexed regulations.

The Oil and Gas Production and Conservation Act is referred to as the "Act" within these regulations. The limits of liability are outlined in section 3 of the regulations and are as follows:

- a) For areas referred to in paragraph 6(1)(a) of the Arctic Waters Pollution Prevention Act, the limit is the amount by which \$40 million exceeds the amount prescribed under section 9 of that Act.
- b) For submarine areas north of the sixtieth parallel of north latitude not covered by paragraph (a), the limit is \$40 million.
- c) For areas within the Yukon Territory or Northwest Territories covered by or located within 200 meters of any inland water body not covered by paragraph (a), the limit is \$25 million.
- d) For areas within the Yukon Territory or Northwest Territories not covered by paragraphs (a) or (c), the limit is \$10 million.
- e) For any area to which the Act applies and for which no other limit is prescribed by these regulations, the limit is \$30 million.

Problems

1. Summarizer picks information from webpage irrelevant for understanding of the document
2. Summarizer includes some technical document information that is not relevant
3. Summarizer decides to include the full list in simplified version but omits certain information that affects the meaning of the items on the list

Summary with customized prompt

The document outlines regulations for liability limits concerning spills, authorized discharges, and debris from oil and gas exploration and production activities.

It applies to businesses engaged in these activities and sets liability limits based on location: \$40 million for certain Arctic areas, \$40 million for submarine areas north of the 60th parallel, \$25 million for areas near inland waters in the Yukon or Northwest Territories, \$10 million for other areas in these territories, and \$30 million for any other applicable areas.

Result: This summary is much better but still can be better with fine-tuned AI model.



Thank you!

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