



**MINISTRY OF FOREIGN AFFAIRS  
OF DENMARK**  
*Invest in Denmark*

# **THE USE OF AI TO POWER THE RETAIL INDUSTRY**

## **- DANISH EMERGING TECH WEBINAR SERIES**

**INVEST IN DENMARK IN PARTNERSHIP WITH NASSCOM - SEPTEMBER 14TH 2021**

# AGENDA

1. WELCOME AND FRAMING BY INVEST IN DENMARK
2. THE DANISH AI ECO-SYSTEM
3. MIKAEL MUNCK, 2021.AI
4. KIM HEIN, RETAILTECH LAB
5. Q&A AND WRAP UP

## TODAYS SPEAKERS:



Mikael Munck is the co-founder and CEO of 2021AI. Mikael 20+ years' experience as leader and executive in the international technology, financial technology space with extensive international, multi-cultural exposure. Experienced in running companies as CEO, Technology departments as CIO and as Global Head several cross organizational units with direct responsibility for 800+ people.



Kim is a resourceful commercial leader with repeated success guiding global business strategy through the formulation of efficient profitable growth plans while leveraging established and emerging technologies to accomplish maximum operational impacts with minimum resource expenditures.

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# WHY DENMARK?



- The most digital economy and society in Europe providing excellent opportunities for testing and applying AI within highly digitalised application areas incl. health, acoustics, robotics, finance and agriculture



- Access to world-class AI research and an attractive talent pool acknowledged for its user-driven innovation and ability to integrate complex software systems



- A growing industry with a myriad of innovative start-up companies looking for partnerships to co-develop solutions and grow internationally



- Unique partnering opportunities with leading Danish research institutions in the development and deployment of AI and machine learning in a growing regional market

# DENMARK – A DIGITAL FRONTRUNNER

- For decades, Denmark has been at the forefront of innovations within **ICT, AI** and **Machine Learning**
- Denmark provides excellent opportunities for **developing, testing** and **applying** AI within highly digitalised application areas.
- The country provides access to world-class **applied AI research** and an **attractive talent pool** acknowledged for its **user-driven innovation** approach and ability to integrate complex software systems.

## OECD-RANKING

- #1 Use of digital public systems
- #1 Digitalisation of businesses
- #1 Population view on AI
- #2 ICT-specialist skills
- #3 Technology readiness.

(An AI Nation – Harnessing the Opportunities of Artificial Intelligence in Denmark, McKinsey 2019)

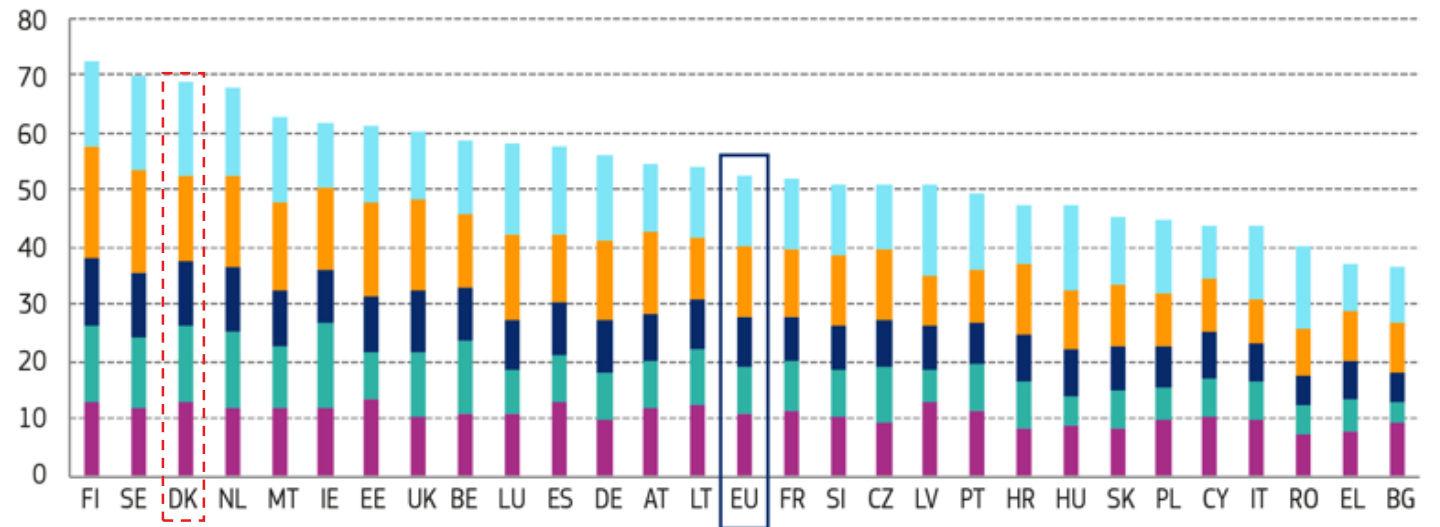


# DENMARK A DIGITAL FRONT RUNNER

Denmark is in the absolute top in the 2020 version of the Digital Economy and Society Index (DESI), which indicates that Danes are among the most confident and adaptive among the 28 EU countries in using online services such as communicating with public authorities and online shopping and banking.



- #1 ON CONNECTIVITY**
- #7 ON HUMAN CAPITAL**
- #4 ON USE OF INTERNET SERVICES**
- #5 ON INTEGRATION OF DIGITAL TECH.**
- #3 DIGITAL PUBLIC SERVICES**



Note: The weighting of the different parameters have changed slightly with the 2020 edition of DESI compared to the version published by the European Commission in 2019. As a result, the rankings have changed. Previously Denmark ranked as the overall #1.

# NATIONAL STRATEGY FOR ARTIFICIAL INTELLIGENCE

March, 2019, the Danish Government revealed their new strategy for AI.

The vision is: ***Denmark must take the lead in responsible development and application of artificial intelligence***

Goals:

1. Denmark must have a common ethical ground for artificial intelligence. With humans in the center.
2. Danish researchers must research and develop artificial intelligence.
3. Danish companies must achieve growth by developing and applying artificial intelligence.
4. The public sector must use artificial intelligence to offer world class service.



# A STRONG TALENTPOOL



- Interactive spaces
- Health
- Cyber security
- AI - NLP
- Human Centered AI



- Foundations for AI
- Data-intensive Systems
- Visual analytics
- Augmented- and virtual reality
- Cryptography
- Algorithmic and complexity
- Programming languages
- Human Centered AI



- Robottech
- Health Care
- Sustainability



- Reinforcement learning
- Spatiotemporal data
- Web-based systems
- Data-Intensive Systems



**DTU Compute**  
Department of Applied Mathematics and Computer Science

- Human-centered AI
- Algorithmic and complexity
- Entrepreneurship (Skylab)

UNIVERSITY OF COPENHAGEN



Department of Computer Science

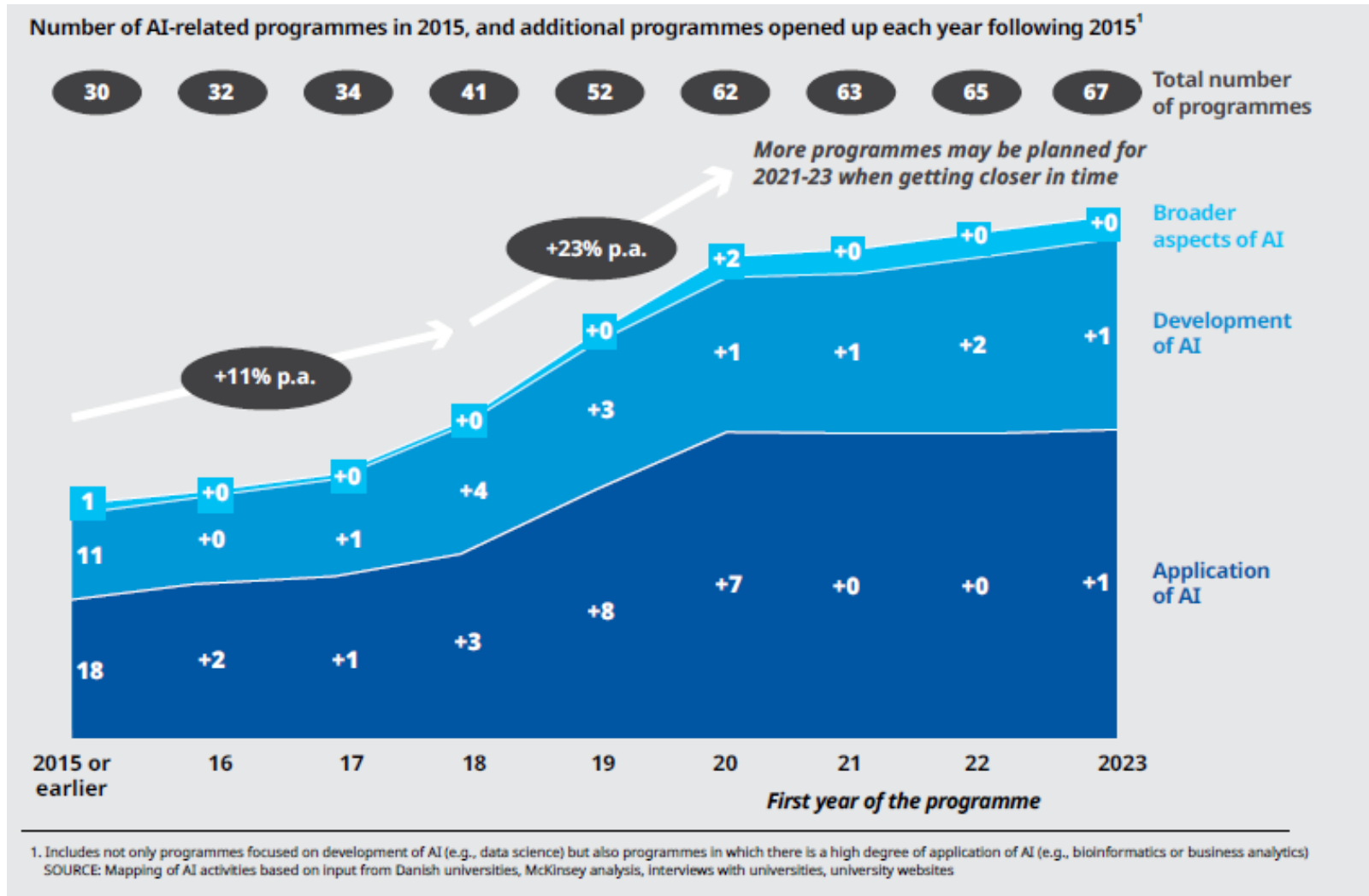
- National Language processing (NLP)
- Algorithmic (BARK)
- Machine Learning
- Data Mining

**IT UNIVERSITY OF COPENHAGEN**

- Algorithmic
- NLP
- Human Centered AI
- Network Science

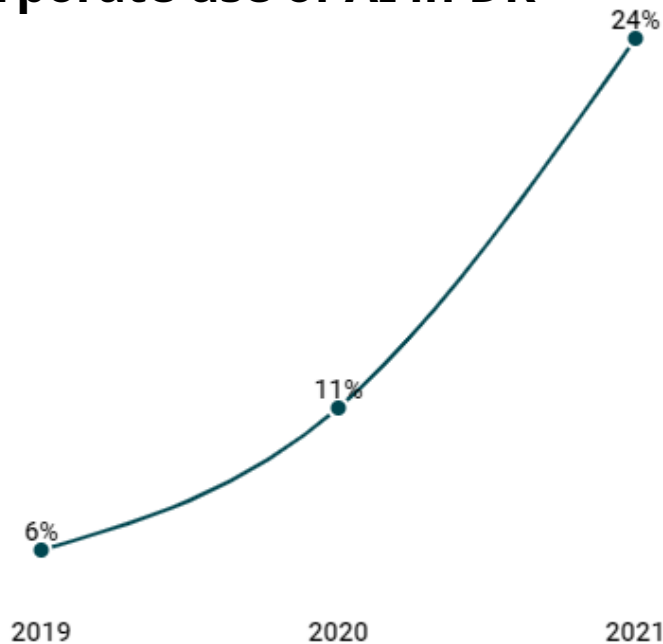


# AI-RELATED EDUCATIONAL PROGRAMMES



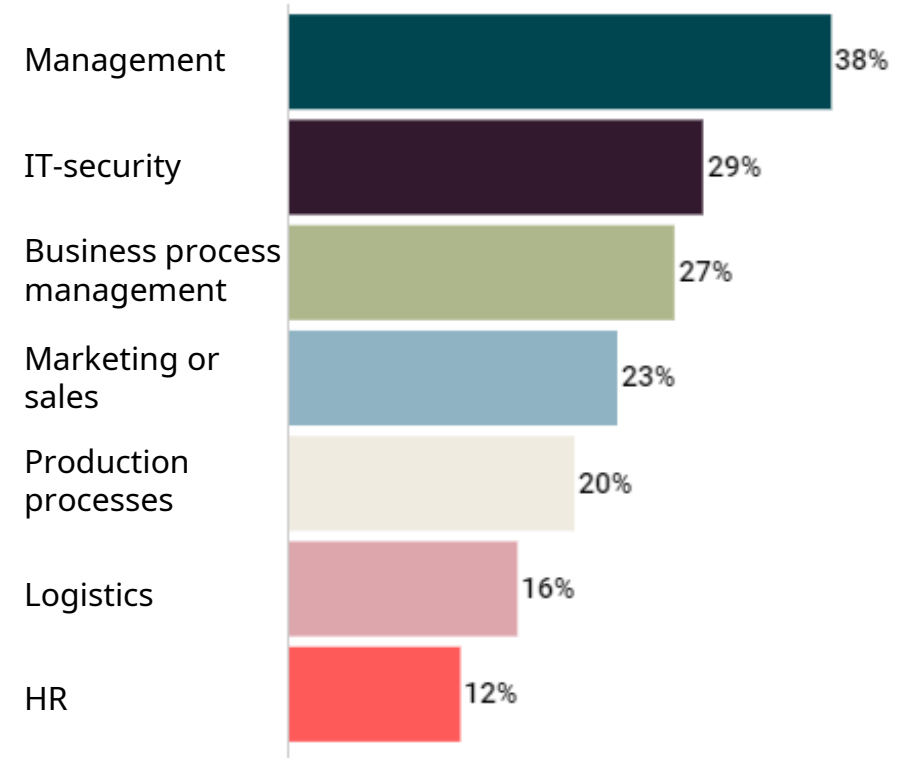
# AI IN DENMARK

## Corporate use of AI in DK



Now more than 4,000 Danish companies use artificial intelligence. This corresponds to 24% of the Danish business community, which is an increase from 2019 (6%) and 2020, when 11% of companies used AI. In comparison, the EU average is 7%.

## This is how companies use AI in DK



# SIGNATURE PROJECTS

## **EARLY DIAGNOSIS OF CANCER AT ODENSE UNIVERSITY HOSPITAL SAVES LIVES**

The Region of Southern Denmark is working on using AI to diagnose cancer more quickly. By analysing pictures of cancer cells, AI can see whether a cell is cancerous with a high degree of certainty. Early diagnosis makes it possible to commence treatment faster, and thereby improve patients' chances of survival. The work is part of a larger initiative in the area at Odense University Hospital.

## **OPTIMISATION OF THE DRINKING WATER SYSTEM IN THE CITY OF AARHUS**

Production, treatment and distribution of drinking water demands a lot of energy, which is expensive and bad for the environment. Using AI the CHAIN project being funded by Innovation Fund Denmark will analyse large volumes of water-consumption data (from sensors etc.) to minimise energy consumption on pumping water. This could also reduce the environmental impact of operating the water system.

## **LUGGAGE AT COPENHAGEN AIRPORT**

In 2018, 30.3 million passengers went through Copenhagen Airport. This was an increase from 21.5 million in 2010. More passengers means more luggage. Since 2016, Copenhagen Airport is using AI to optimise luggage handling. Among other things, AI predicts when the staff can clean the aircraft and put cases on conveyor belts. Focus is on time optimisation. This has resulted in fewer queues and better passenger experience.

## **AI WILL HELP WITH BEER TASTING AT CARLSBERG**

1,000 different beers are screened every day at the Carlsberg laboratory in Valby near Copenhagen. It is a difficult and time-demanding process. Therefore, researchers at the laboratory have launched a project to measure taste aromas before brewing the beer. The laboratory uses chemical sensors to test thousands of different types of yeast. Data from the yeast types will be analysed using AI, and then researchers will be able to predict whether a yeast has the right quality. In the future, it is likely that the technology could also measure other food, air pollution, etc.

# LOOKING FOR AREAS TO TEST AND APPLY AI SOLUTIONS?

**Health:** Denmark has one of the most digitalised health care systems in the world. In collaboration with research institutions and private companies the Danish health care sector strives to keep finding new and innovative digital solutions. This makes Denmark an interesting playground for development of intelligent health solutions

**Robotics, Automation and Drones:** Denmark has a high-tech ecosystem within robotics and drones. This knowledge in combination with a large number of SME's and larger companies with a need to digitalise and automate makes Denmark an interesting playground for development of intelligent robotics, drones and automation solutions

**Finance:** Denmark has a growing ecosystem within innovative Fintech solutions, and a newly launched "sandbox" initiative from the Danish FSA. This makes Denmark an interesting playground for development of intelligent Fintech solutions

**Agriculture:** Denmark has one of the world's most digitalised agricultural and food sectors. Working with making intelligent solutions for the everyday production but also coming up with new intelligent solutions to help farmers manage their crops with e.g. drones and AI. This makes Denmark an interesting playground for development of intelligent agriculture and food solutions

**Energy and utilities:** Denmark have some of the worlds most ambitious climate goals. Businesses within green energy technology and environmental technology are increasingly using AI to develop new products, services and business models. The products can help businesses as well as consumers to reduce costs and carbon footprint

**Transport and logistics:** In the transport area, new AI solutions can be developed to optimise traffic management to benefit users of both public and private transport and logistics.

# DENMARK: BEST COUNTRY FOR BUSINESS



## Gateway to the Nordics

Four international airports serve tourism, business and cargo. Copenhagen Airport has direct international routes to more than 184 destinations as per January, 2020, making it by far the largest airport and logistics hub in the Nordics.

## ONE OF THE MOST DIGITAL COUNTRIES IN THE EU

Digital Economy and Society Index (2020)

USD 60,195

Per capita GDP (2019)



## Language

9 out of 10 people speak English and 5 out of 10 speak German.



## #3 in the world on work-life balance

OECD Better Life Index (2020)

## #1 in Europe for ease of doing business

The World Bank (2012-2020)

**22%**  
corporate tax



Denmark aims to be powered entirely by renewable sources by 2050

## One of the most flexible labour markets in the world

IMD (2020)

## Strong infrastructure

Denmark has a strong infrastructure, including four international airports, sea ports, bridges and an integrated railway system. Together, they enable easy distribution of goods and services to the Nordic markets.

# **10 REASONS FOR ESTABLISHING YOUR AI R&D ACTIVITIES IN DENMARK**

- 1. WORLD-CLASS SOFTWARE DEVELOPMENT**
- 2. AMBITIOUS POLITICAL STRATEGIES**
- 3. THE MOST DIGITAL COUNTRY IN EUROPE**
- 4. SOME OF THE WORLD'S BEST DATA**
- 5. SCIENTIFIC IMPACT**
- 6. UNIQUE PARTNERING OPPORTUNITIES**
- 7. VIBRANT START-UP ECOSYSTEM**
- 8. ACCESS TO WORLD-CLASS AI TALENT**
- 9. IDEAL TESTBED**
- 10. STABILITY AND EASE OF DOING BUSINESS**

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CEO & Founder, 2021.AI

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**Kim Hein**  
Director, RetailTech Lab

Kim is a resourceful commercial leader with repeated success guiding global business strategy through the formulation of efficient profitable growth plans while leveraging established and emerging technologies to accomplish maximum operational impacts with minimum resource expenditures.

Proven history of achievement working with globally recognized brands. He have the talent for launching programs related to training and team development, restructuring and transformation projects, business turnaround strategies, and supply chain development and management.



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# THANK YOU FOR YOUR ATTENTION

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