



LUND UNIVERSITY

AI Market Survey: Current State of AI in the Øresund Region Private Sector

Lidfeldt, August; Borg, Markus; Bronson, Joshua

2020

Document Version:
Other version

[Link to publication](#)

Citation for published version (APA):

Lidfeldt, A., Borg, M., & Bronson, J. (2020). *AI Market Survey: Current State of AI in the Øresund Region Private Sector*. (Technical Report; No. 104, 2020). Computer Science, Lund University.

Total number of authors:
3

Creative Commons License:
CC BY

General rights

Unless other specific re-use rights are stated the following general rights apply:

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Read more about Creative commons licenses: <https://creativecommons.org/licenses/>

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

LUND UNIVERSITY

PO Box 117
221 00 Lund
+46 46-222 00 00

AI MARKET SURVEY

Current State of AI in the Øresund Region
Private Sector

October, 2020

August Lidfeldt, Markus Borg, and Joshua Bronson
Lund University and RISE Research Institutes of Sweden
Provided by AIQ Meta-Testbed



Executive Summary

The prevalence of Artificial Intelligence (AI) in the business landscape is indisputable. However, there are considerable gaps between the visionary ideas businesses communicate and their operational use of AI. The goal of this market survey is to identify companies currently working with AI in the Øresund Region - referred to as AI companies. The survey, conducted between June and September 2020, primarily targets AI companies based in Helsingborg, Lund, Malmö, and Copenhagen. In total, the survey has identified 193 AI companies in the Øresund Region, 113 in Sweden and 80 in Denmark. The goal of this survey is not to evaluate the business potential of individual companies, but rather to map the current regional AI landscape and to provide a snapshot of the technology adoption.

The market survey is part of the research project AIQ Meta-Testbed, a pre-study exploring the potential of establishing a local testbed dedicated to quality assurance for AI-enabled products and services - in particular solutions driven by Machine Learning (ML), i.e., MLware. The vision is to support the regional AI ecosystem by pragmatically bridging academic research on testing and local needs for trusted AI. The initiative is funded by Plattformen at Campus Helsingborg, Lund University.

Technical Report 104, 2020

Department of Computer Science
Lund University, Sweden



LUNDS
UNIVERSITET

Table of Contents

Background	4
Inherent Challenges of AI Market Surveys	4
Inclusion Criteria	5
Data Collection	5
AI Trends in the Øresund Region	6
<i>Founding Year</i>	6
<i>Financial Data for AI Companies Sweden</i>	7
<i>Active Locations</i>	8
<i>Division Representations (SNI)</i>	9
AI Companies in Sweden	10
AI Companies in Denmark	13
AIQ Meta-Testbed	15
Dataset	15
Definitions Used in the AI Market Survey	16
AIQ Meta-Testbed Working Definitions	16

Background

The term AI was coined in the 1950s, defined as the “science and engineering of making intelligent machines”. The field has seen substantial development since those early days. What was considered AI decades ago would typically not be seen as particularly intelligent today, but rather as commodity solutions for automation and decision support. Interest in AI has been cyclical over the years with periods of inflated expectations followed by so called “AI Winters”, characterized by less interest and funding. As we write this report, there is again a massive global upswing of interest in AI. According to Statista, the annual global AI market growth was estimated to 54% in 2019.¹

Machine Learning (ML) dominates contemporary AI applications. ML, which was also coined in the 1950s, provides systems the ability to automatically learn and improve from data without explicit programming. Thanks to the availability of vast amounts of data and improvements in high-performance computing a subset of ML referred to as Deep Learning (DL) really took off in the 2010s. DL allows a type of representation learning that can harness the benefits of Internet-scale data, where the accuracy of previous ML approaches peaked at orders of magnitude less data. DL has revolutionized several application areas such as computer vision, machine translation, and speech recognition.

Inherent Challenges of AI Market Surveys

We conducted this market survey to identify companies currently working with AI in the Øresund Region. Three main challenges plague an AI market survey like ours. There is no consensus on the definition of AI. Interpretations range from simple statistical analysis to sentient humanoid robots from the science fiction literature.

The ambiguity of the term goes hand in hand with the fuzz and buzz surrounding the technology. Many companies are enthusiastically referring to AI in their communication, but upon further investigation, we find that only a fraction explicitly detail how AI is successfully used in their businesses. Many talk about it. Substantially fewer know how to benefit from it.²

Some companies avoid the term AI altogether to stay away from the buzz and its potential hype. A subset of these companies refer to the technically more precise term ML. Another subset does not communicate any use of AI/ML, despite benefiting from the technology.

¹ <https://www.statista.com/statistics/607960/worldwide-artificial-intelligence-market-growth/>

² <https://www.mediadistillery.com/machine-learning-is-like-teenage-sex-a-peek-behind-the-curtain/>

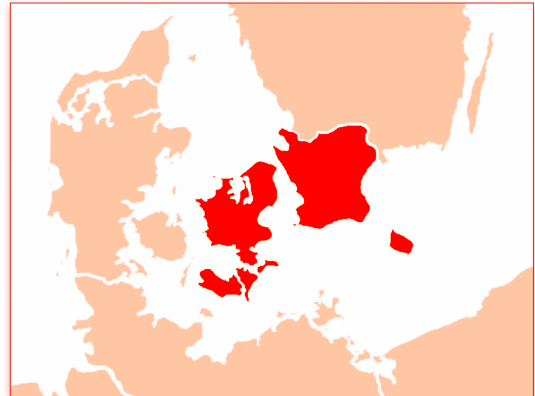
Inclusion Criteria

The AI Market Survey was performed by the authors of this report. Whether or not a candidate company was included in the AI Market Survey was based on the interpretation of the authors. Two criteria were initially specified for inclusion as a regional AI company.

1. The company must present current AI activity through products, projects or divisions. Example pieces of evidence include web pages, news media, white papers, product descriptions, blog posts, and organizational charts.
2. The identified AI activity must be based on applied AI that, at least partly, is developed in the Øresund Region.

Interpretations are inevitable, and we chose an inclusive approach to borderline cases. It is not in the scope of the market survey to assess whether or not reported AI usage is successful or promising. If a company presents ongoing AI activities, and development activities evidently are undertaken in the region, we included the company. The goal of this survey is not to evaluate the business potential of individual companies, but rather to map the current regional AI landscape and to provide a snapshot of the technology adoption.

Geographically, the scope of this study is limited to the Øresund Region, i.e., Skåne County and the Capital Region of Denmark. In practice, our directed search efforts have focused on Helsingborg, Lund, Malmö, and Copenhagen.



Data Collection

The findings in this report is primarily based on desk research, i.e., web search complemented by input from local tech hubs. In a few cases we communicated directly with candidate AI companies. The AI landscape is in constant flux, especially in the dynamic startup scene. The content of this exploratory market survey evolved between June and September, 2020. Google Search was used as the search engine. Our thanks go to the following local tech hubs and networks who all provided valuable information:

Ideon Science Park

AI Sweden

Mindpark

Innovation Skåne

GetAI

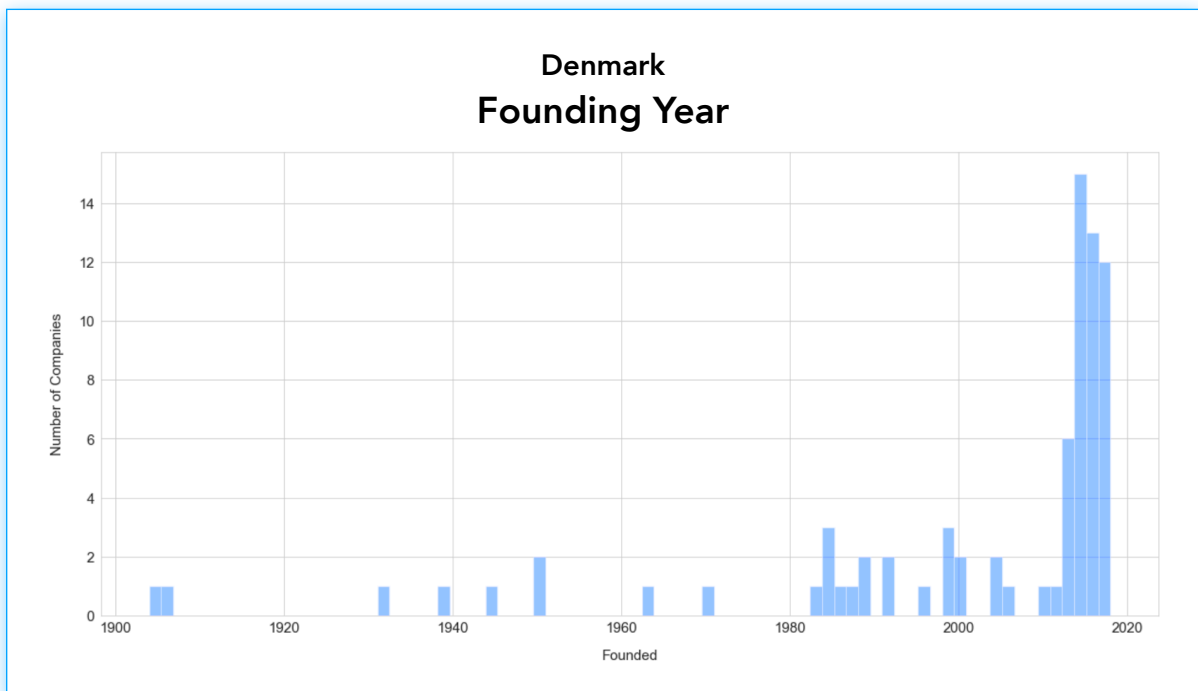
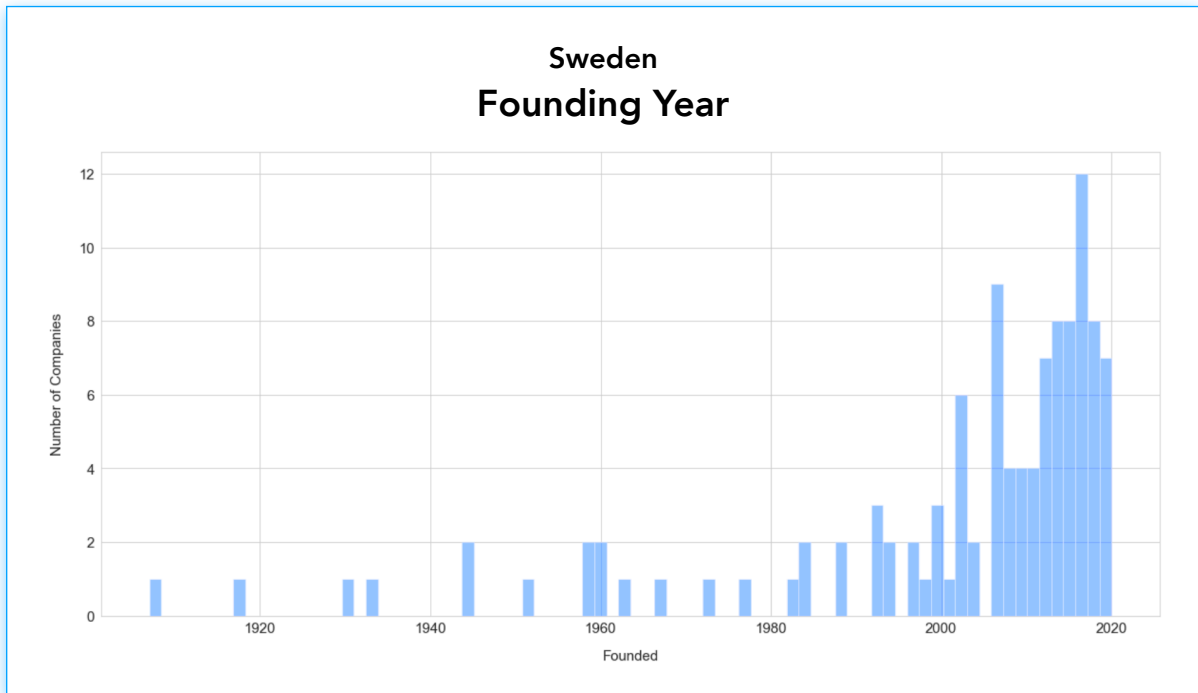
Barrel AI

For all companies included in the AI Market Survey, we collected additional Swedish financial data from Ratsit and the founding years of Danish companies were extracted from Crunchbase.

AI Trends in the Øresund Region

Founding Year

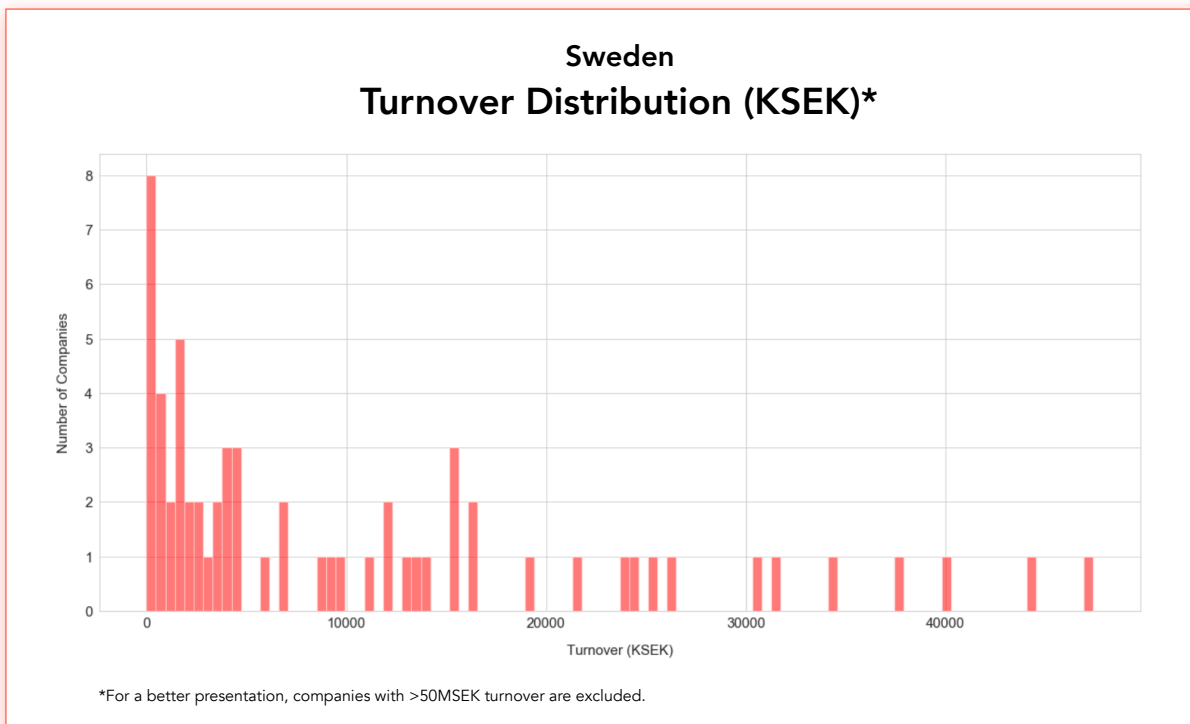
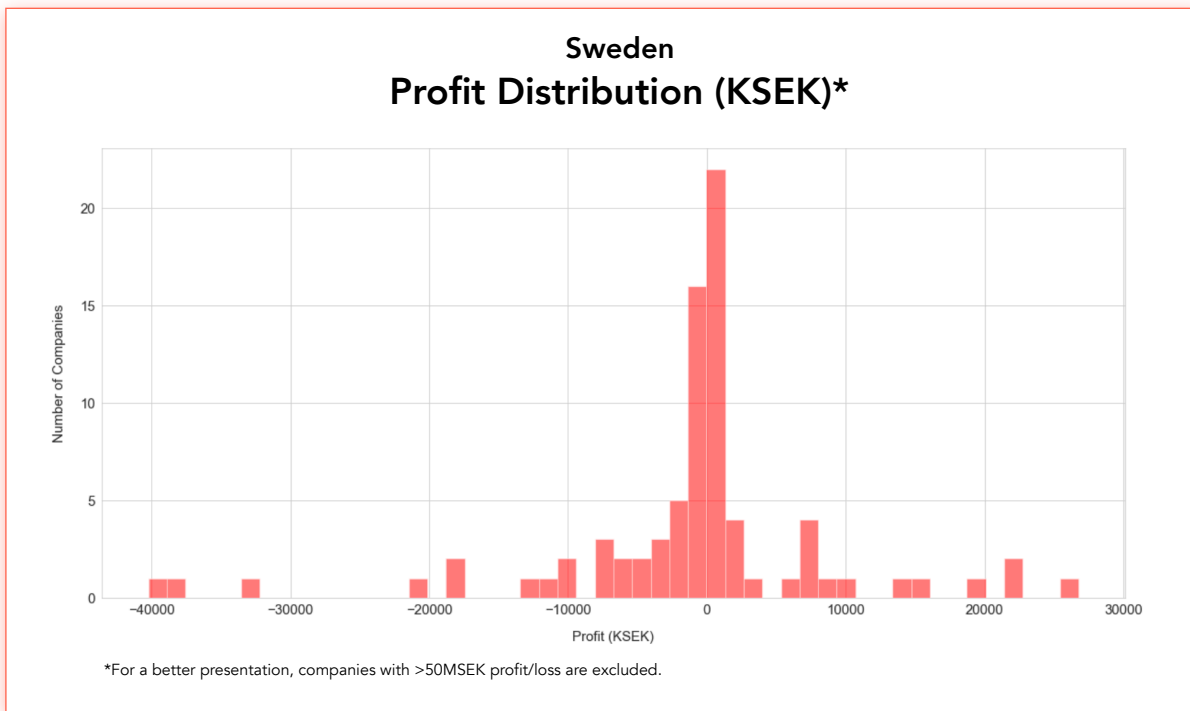
The distribution of AI companies' founding years is skewed toward the 21st century. Many of the young companies included focus entirely on AI or rely on business models centered around data and machine learning. The older companies included are usually larger corporations who have begun implementing AI in one or a few business sectors. The large nature of these corporations is often synonymous with AI being less integrated. More common for these companies is to have smaller pilot projects or trials dedicated to AI.



Financial Data for AI Companies Sweden

We present financial data for the Swedish AI companies. The median financial data is often a better representation of the market as the average value for turnover and profit are heavily affected by outliers losing or earning billions of SEK yearly.

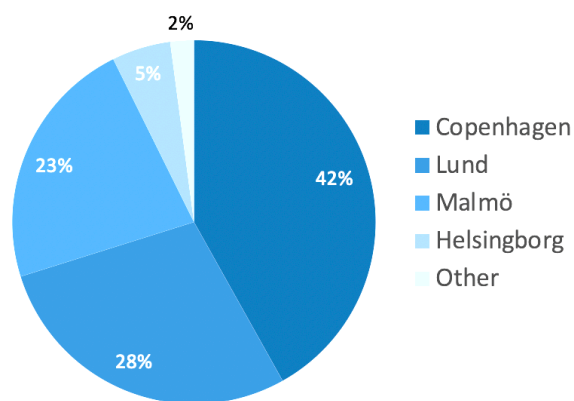
Average turnover	4,066,882 KSEK	Average profit	- 22,163 KSEK
Median turnover	16,493 KSEK	Median profit	0 KSEK



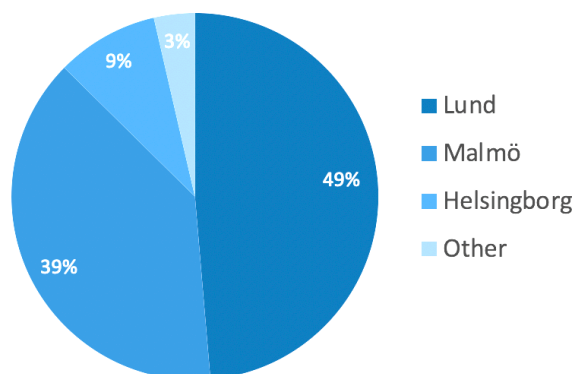
Active Locations

A majority of the companies found in the study are in Copenhagen, Lund and Malmö. This division can likely be explained by Copenhagen being a capital city and Lund having a strong research backing from Lund University and surrounding organizations. Malmö in third place is Sweden's third largest city and home to numerous innovation centers and startup hubs.

Active Locations in Øresund Region



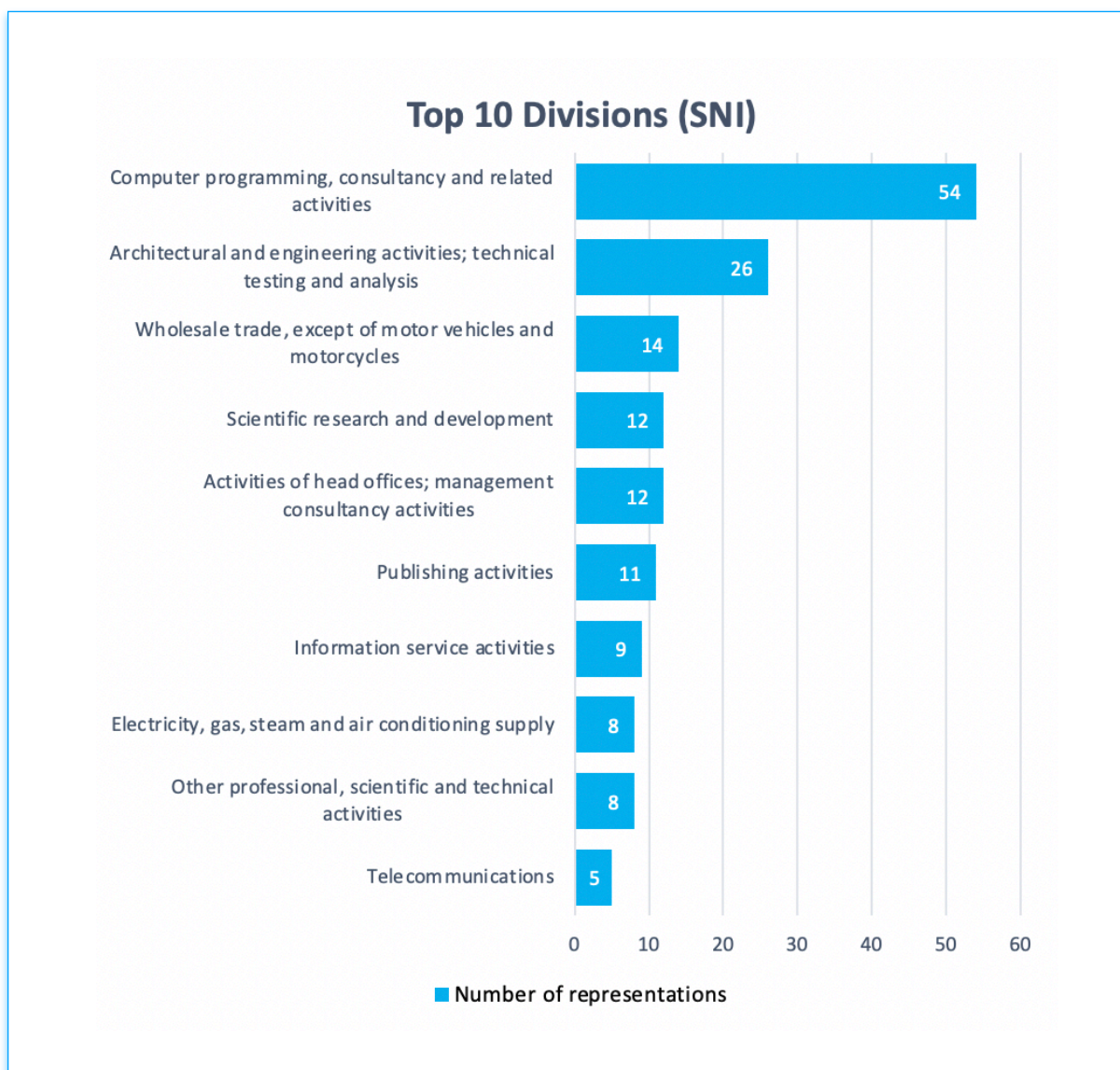
Active Locations in Sweden



Division Representations (SNI)

The graph below shows the frequency of different divisions among AI companies in Sweden. The divisions are recorded upon company registration and expressed with SNI (Svenskt Näringsgrensindelning). "Division" is the most coarse labeling of the SNI. Each company can also have several different division labels.

The distribution shows that the most common SNI division is Computer programming, consultancy and related activities. The second most common division is other engineering activities. However, the top ten divisions also feature Wholesale, Research and Power supply, showing that AI is applied widely across different sectors. The wide adoption of AI is in line with the increased level of digitalization of the economy in general.³



³ <https://www.swedsoft.se/wp-content/uploads/sites/7/2020/08/Den-programmeringsbara-ekonomin.pdf>

AI Companies in Sweden

	Name	Founded	Location
A	ABB Power Grids Sweden AB	1930	Malmö
	Acconeer	2011	Lund
	Accumbo	2017	Lund
	AI Sustainability Center	2018	Malmö
	Alfa Laval (Corporate) AB	1907	Lund
	Altair	1994	Lund
	Amazing Innovation	2020	Lund
	Anoto	1988	Lund
	Apptus	2000	Lund
	ARM Sweden AB	2006	Lund
	Auranest	2014	Lund
	Axis Communications AB	1984	Lund
	B	Backtick	2018
Baxter		1972	Lund
BetterWealth		2016	Malmö
BIMObject		2011	Malmö
Bintel		2017	Lund
Bionamic		2019	Lund
BitCraze		2011	Malmö
Boozt Fashion		2006	Malmö
Bosch		1945	Lund
Brainlit	2012	Lund	
C	Cellavision	1994	Lund
	Century Analytics	2015	Malmö
	Cerence	2019	Lund
	CGI Sverige	1988	Malmö
	Cognibotics	2013	Lund
	Combine	2002	Lund
	Combitech	1982	Lund
	Considera Health	2018	Lund
D	Danji	2015	Lund
	Debricked	2018	Malmö
	Dianovator	2017	Malmö
	Donna Legal	2015	Malmö
	Dvel	2012	Lund
E	E.ON Energidistribution	1959	Malmö
	EC Solutions	2007	Helsingborg
	Eigenvision	2015	Malmö
	Empear	2015	Malmö
	Ericsson AB	1952	Lund
	eScan	2019	Malmö

	Name	Founded	Active Location
F	F-Secure	1999	Lund
G	GetAccept	2015	Malmö
	GetAI	2019	Helsingborg
	GoalArt	2003	Lund
H	Hoofstep	2015	Helsingborg
	Hövding	2006	Malmö
	Hydromesh	2020	Lund
I	Ifrågasätt	2015	Malmö
	IKEA of Sweden	1960	Malmö
	Imagination	2008	Lund
	InfoNomy	2009	Lund
	inRiver	2003	Malmö
	Inwido	2002	Malmö
K	Katam	2010	Lund
	KPMG	1944	Malmö
L	Länsförsäkringar AB	1997	Malmö
	Lindab (Innovation Hub)	1984	Helsingborg
	Lytics	2011	Malmö
M	Mapillary	2013	Malmö
	Mindified	2017	Malmö
	Minut	2015	Malmö
	Modcam AB	2013	Malmö
N	Neo4j	2006	Malmö
	NeoDev	2012	Malmö
	NetNordic Sweden	2006	Lund
	nok9	2008	Lund
	NordAxon	2018	Malmö
	Nordvästra Skånes Vatten och Avlopp AB	2008	Helsingborg
	NSVA		
	North Link	2018	Helsingborg
	Nowaste Logistics	2007	Helsingborg
O	ON-IQ Solutions	2013	Lund
P	PainDrainer	2018	Lund
	Parkiro	2018	Lund
	Precise Biometrics	1997	Lund
	Prisjakt	2004	Ängelholm
	Purple Scout	2003	Malmö

	Name	Founded	Active Location
Q	QlikTech	1993	Lund
	Qlucore	2006	Lund
R	Resurs Holding AB (publ)	2012	Helsingborg
	Rich Relevance	2000	Malmö
S	Safeture	2009	Lund
	Securitas	1967	Malmö
	Semcon Sweden AB	1998	Lund
	Sensitive	2013	Lund
	Sensenode	2012	Lund
	Sentian	2016	Malmö
	SIB solutions	2017	Lund
	Sigma IT AB	1992	Lund
	Sinch	2007	Malmö
	Sony Mobile Communications	2001	Lund
	Spectronic Medical AB	1994	Helsingborg
	Spiideo	2012	Lund
	Stora Enso Paper AB	1959	Nymölla
	Strossle	2012	Malmö
	Superlab	2014	Helsingborg
SWECO Sverige AB	1933	Malmö	
Sweden Water Research	2013	Lund	
System Verification Sweden AB	2002	Malmö	
T	Tendo	2016	Lund
	Tengai/Furhat Robotics	2019	Malmö
	Terranet	2004	Lund
	TryggaAvtal	2016	Trelleborg
	Tyréns	1977	Lund
U	Ubisoft Entertainment Sweden AB (Massive Entertainment)	2008	Malmö
	United Robots AB	2016	Malmö
V	Verifyter	2010	Lund
	Vestas	1992	Malmö
	Volvo Personvagnar AB (Volvo Cars)	1960	Lund
	Vultus	2016	Lund
X	Xenergic	2017	Lund
Ö	Öresundskraft AB	1963	Helsingborg

AI Companies in Denmark

	Name	Founded	Active Location
#	2021.AI	2016	Copenhagen
A	A.P. Møller – Mærsk A/S	1904	Copenhagen
	Abzu	2018	Copenhagen
	Abzu	2018	Copenhagen
	Accenture A/S	1989	Copenhagen
	Activity Stream	2013	Copenhagen
	Aegis Media Danmark A/S	1963	Copenhagen
	Agillic	1999	Copenhagen
	Ange Optimization	2006	Copenhagen
	Archii	2013	Copenhagen
B	Blackwood Seven	2013	Copenhagen
	BotXO	2016	Copenhagen
C	Carlsberg Danmark A/S	1847	Copenhagen
	Circle K Danmark A/S	1951	Copenhagen
	CloudCutout	2014	Copenhagen
	Cluedin	2015	Copenhagen
	Cobiro	2016	Copenhagen
	Corti	2016	Copenhagen
D	Danske Bank A/S	1871	Copenhagen
	Dell A/S	1986	Copenhagen
	Develop Diverse	2017	Copenhagen
	Dixa	2015	Copenhagen
	Dreamdata.io	2018	Copenhagen
	Duuoo	2016	Copenhagen
F	Falck Danmark A/S	1906	Copenhagen
	FeelSensem	2014	Copenhagen
	Ferring Pharmaceuticals A/S	1950	Copenhagen
	FLSmidth A/S	1882	Copenhagen
G	Forecast	2016	Copenhagen
	Genmab A/S	1999	Copenhagen
	Global Business Travel ApS	1984	Copenhagen
	Grandhood	2017	Copenhagen
H	Gravity4	2014	Copenhagen
	H & M Hennes & Mauritz A/S	1970	Copenhagen
	Halfspace	2013	Copenhagen
	Hedia	2015	Copenhagen
	Hedia	2016	Copenhagen

	Name	Founded	Active Location
I	Immunitrack	2013	Copenhagen
	itelligencegroup	1989	Copenhagen
	Itera	1999	Copenhagen
J	Jatana	2017	Copenhagen
	JourneyXP	2014	Copenhagen
L	L'oréal Danmark A/S	1983	Copenhagen
	LEGO Group	1932	Copenhagen
	Lundbeck A/S, H	2000	Copenhagen
M	Modl.ai	2018	Copenhagen
N	Netcompany A/S	2000	Copenhagen
O	Ontame.io	2015	Copenhagen
P	Peakon	2014	Copenhagen
	Peergrade	2015	Copenhagen
	Plant Jammer	2016	Copenhagen
	Pleo	2015	Copenhagen
	Post Danmark A/S	1624	Copenhagen
	Praice	2014	Copenhagen
R	raffle.ai	2018	Copenhagen
	Rambøll Danmark A/S	1945	Copenhagen
	Relink	2016	Copenhagen
	Roger.ai	2016	Copenhagen
	Rokoko	2014	Copenhagen
S	Sandoz A/S	1996	Copenhagen
	SAP Danmark A/S	1988	Copenhagen
	Strossle	2013	Copenhagen
	Systematic	1985	Copenhagen
T	Telenor A/S	1992	Copenhagen
	Tomorrow	2016	Copenhagen
	TradeShift	2010	Copenhagen
U	Uizard	2017	Copenhagen
	Undo	2005	Copenhagen
	Unilever Danmark A/S	1939	Copenhagen
	Unity Technologies ApS	2004	Copenhagen
	Unsilo	2012	Copenhagen
V	Valuer	2017	Copenhagen
	Veo	2015	Copenhagen
	Visma	1985	Copenhagen
W	WasteHero	2017	Copenhagen
	Wexöe	1992	Copenhagen
	Whispr	2018	Copenhagen
	Wind Power LAB	2016	Copenhagen
	Worksome	2016	Copenhagen
Z	Zigna	2015	Copenhagen

AIQ Meta-Testbed

Developing systems that rely on machine learning requires new approaches to quality assurance. No longer do developers explicitly express all logic in source code – instead we train solutions on large quantities of data. We refer to this subset of software as MLware. But as we move from coding to training, how can we trust the resulting systems?

AIQ Meta-Testbed is a prestudy that explores the potential of establishing a testbed in Helsingborg, Sweden dedicated to tackle this challenge. A testbed to test AI testing – an AI Meta-Testbed.

The initiative is funded by Plattformen at Campus Helsingborg, Lund University.

Dataset

The dataset is available for download in csv-format using the QR-codes below. The data consists of the columns Company Name, Founding Year, Business Area (SNI), Active Location, Turnover (KSEK, 2019), Profit (KSEK 2019). Financial data for Copenhagen is incomplete. For companies founded 2019 or later no financial data is available.

AI Companies in Skåne

Download dataset (.csv)



AI Companies in Copenhagen

Download dataset (.csv)



Partners



Definitions Used in the AI Market Survey

Software

A collection of data or computer instructions that tell a computer how to work.

Artificial Intelligence (AI)

A subset of software that automates tasks that normally would require human intelligence.

Machine Learning (ML)

A subset of AI resulting in software that automatically learns and improves from experience without being explicitly programmed. ML solutions are currently dominated by supervised and unsupervised learning.

AI Company

A company that uses AI as part of its business strategy. AI is typically used to enhance products or services offered to the market, or to improve internal processes.

AIQ Meta-Testbed Working Definitions

MLware

A subset of software that enables practical AI solutions that, fueled by data, realizes functionality through supervised and/or unsupervised learning.

AI Quality (AIQ)

The capability of MLware to satisfy stated and implied needs under specified conditions while the underlying data satisfy the requirements specific to the application and its context.

AI Quality Assurance

Any systematic process to provide confidence that the desired AIQ is maintained. Activities include requirements engineering, testing, and development processes.

AI Testing

A subset of AI Quality Assurance that refers to any activity that aims to learn about AI-enabled solutions by executing it. Typically, this refers to executing MLware with the purpose to detect differences between existing and required behavior.

AI Meta-Testing

Any activity that aims to learn about AI Testing by systematically evaluating corresponding test techniques. Activities include systematic fault injection, training set manipulation, and assessment of fault detection capabilities.

AI Meta-Testbed

metatest.ai - a unique initiative funded by Plattformen at Campus Helsingborg, Lund University and supported by RISE Research Institutes of Sweden.