

Demand for AI Talent in the Core Domains of Artificial Intelligence

Within the Israeli High-Tech Sector

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Executive Summary

The purpose of this study is **to assess the current and future demand for research and development talents in the Israeli high-tech industry within the core domains of artificial intelligence**, in order to support the Israel Innovation Authority's policy development on the subject. The study is based on a survey that was conducted between March and May 2025 among technology companies engaged in the development of artificial intelligence in Israel.

Main findings:

AI Companies in Israel

The number of companies engaged in research and development of artificial intelligence ("AI companies")¹ in Israel is estimated at 2,158, of which 1,959 are Israeli companies and 199 are local branches of multinational companies². Most companies (approx. 77% of them) employ up to 50 employees, and over a half (~52%) belong to one of four sectors: Enterprise Software (18.7% of companies), Ecommerce & Marketing (12.7%), Fintech (11%) and Digital Health (9.9%).

Compared to the overall high-tech sector in Israel, artificial intelligence companies tend to mature more successfully, employ more employees, raise more capital, and are on average at a more advanced stage in their life cycle.

Estimated demand for AI talent

Demand for talent in the core domains of artificial intelligence in Israel at the time of the survey is estimated at 2,434 employees. The lower bound of the estimation is 1,895 employees with confidence level of 95%. Those professionals include data scientists, data engineers, ML-Op engineers and others.

This estimate does not include the existing demand in large technology companies (employing 500 people or more). The estimate also excludes companies and organizations that cannot be considered 'tech companies' per se, such as universities and colleges, research institutes, consulting companies, infrastructure and financial companies, all defense industry companies, etc. This estimate also does not include technology companies that employ over 500 employees, due to the low number

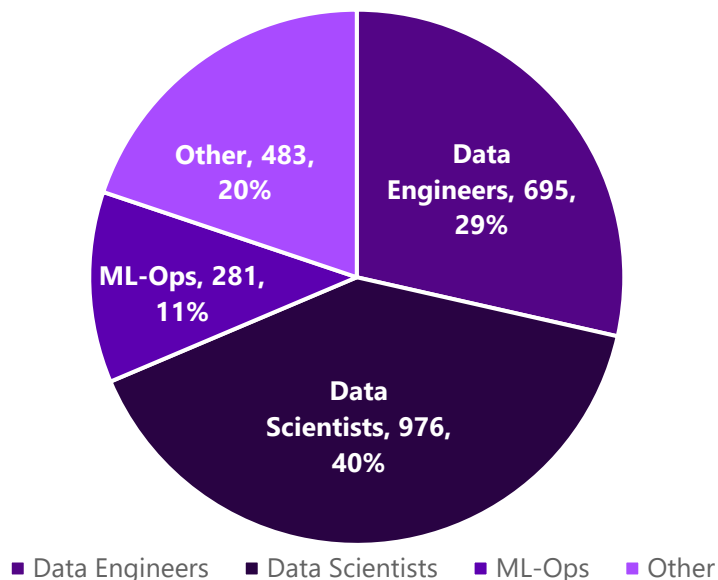
¹ This refers to companies tagged in the IVC database in with at least one of the technology tags relevant to research and development in the core domains of artificial intelligence, see Appendix 3: List of technological tags used to identify the corporate population

² This number is similar to the number of companies tagged with relevant labels in the IVC database in mid-2023, when the number of companies stood at approximately 2,350. This number should not be seen as a trend of decrease in the number of companies, since the change can be attributed to a tagging update, a natural phenomenon in such databases.

of such companies in the sample. A conservative estimate of the demand in companies of this group stands at approx. 220 employees³

³ Six companies with over 500 employees that responded to the survey reported a total demand of approximately 40 employees at the time of the survey. In addition, the lower bound for demand in this group of companies, calculated using the Bootstrap method, is 228 employees. The lower bound is based on a conservative estimate of 0.68 for the percentage of recruitment in these companies, which was obtained using the Wilson method.

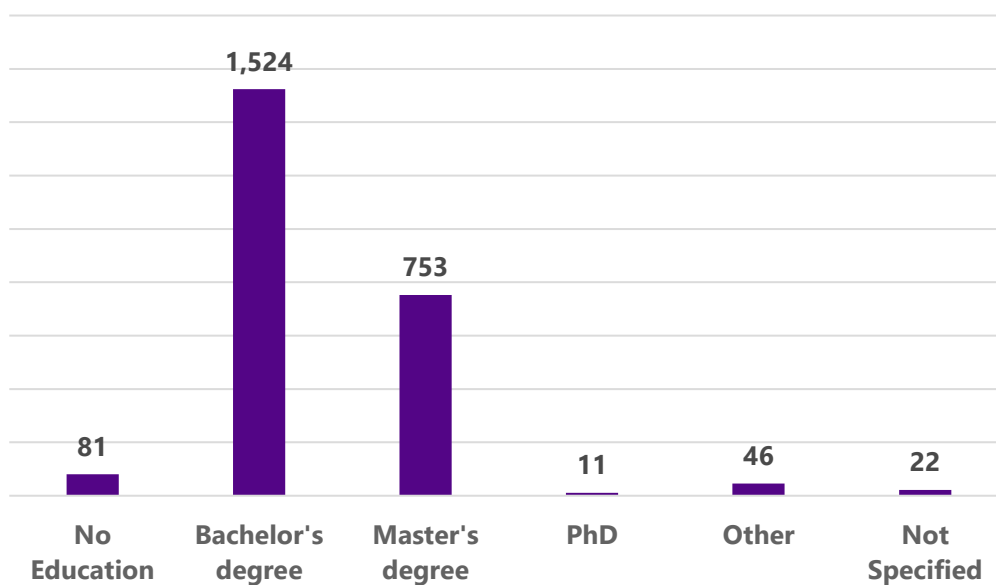
Distribution of professional roles among AI-related positions required by companies in the industry: Number of positions and their share of total AI professional roles



Processed by the Samuel Neaman Institute based on data from AI Talent survey dated Apr-May 2025. The number of respondents to the survey questions is N=48

Most of the demand is for employees with a bachelor's degree, as can be seen in the following figure:

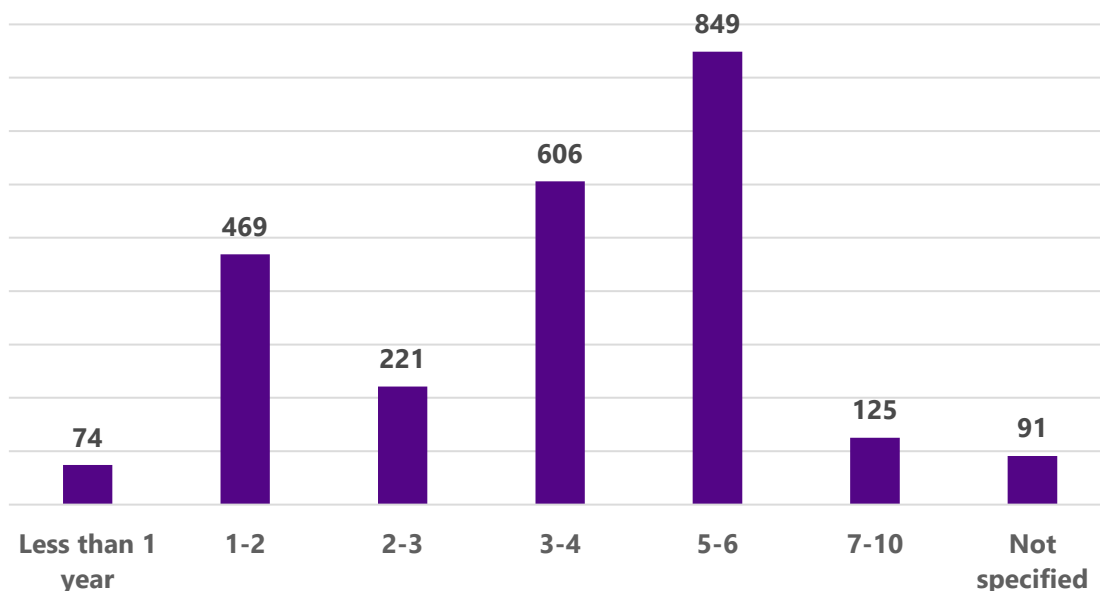
Distribution of demand for AI talent the high-tech industry, Number of positions by level of education



Processed by the Samuel Neaman Institute based on data from AI Talent survey dated Apr-May 2025. The number of respondents to the survey questions is N=48

Most of the demand is for employees with experience of three years or more:

**Distribution of demand for AI talent in the high-tech industry,
Number of positions by years of experience**



Processed by the Samuel Neaman Institute based on data from AI Talent survey dated Apr-May 2025. The number of respondents to the survey questions is N=48

The heatmap below presents the data according to a combined cross-section of education and experience:

**Distribution of demand for AI talent in the high-tech industry,
Number of positions by combined cross-section of level of education
and experience**

	Not specified	Less than 1 year	1-2	2-3	3-4	5-6	7-10
PhD						11	
Master's degree		34	46		163	421	88
Bachelor's degree	70	17	401	221	385	393	37
No Education		23			57		
Not specified + other	22		22			24	

Processed by the Samuel Neaman Institute based on data from AI Talent survey dated Apr-May 2025. The number of respondents to the survey questions is N=48

The survey findings indicate a number of changes compared to a similar survey conducted between June and August 2023:

- **A decrease in overall demand for employees at the time of the survey, from approx. 3,400 employees at the time of the previous survey to approx. 2,400 employees at the time of the current survey.**
- **An increase in the number of positions classified as "other", from only 6% in a survey conducted in 2023 to approx. 20% in the current survey. It is important to investigate the cause of this change and determine whether it reflects a redefinition of roles within the industry.**
- **No significant change in the rate of demand for undergraduate and graduates between the 2023 survey and the 2025 survey**
- **An increased emphasis on professional experience – Increased demand for employees with more than three years of experience (65% of all required employees in the current survey, compared with 44% in the previous one) and a decrease in the demand for employees with less than three years of experience (31% in the current survey compared with 53% in the previous one).**
- **The study reviews the demand and supply trends for employees in the core professions of artificial intelligence and indicates changes in level of education and experience requirements compared to a previous study. However, the study does not provide an interpretation of these changes.**

Demand for workforce with advanced academic degrees versus the talent pool availability

The estimated demand for employees with advanced academic training (either M.Sc or Ph.D graduates) at the time of the survey stands at approx. 800 employees, while the lower bound of the estimation stands on 400 employees (confidence level of 95%)

According to the Israel Central Bureau of Statistics (ICBS), around 1,000 research students graduate their studies each year in subjects relevant to the core domains of artificial intelligence (such as computer science, electrical engineering, data science, mathematics, statistics, and more). Assuming that on average approx. 30-40% of those graduates will be employed as artificial intelligence experts in the industry - the number of graduates added to the industry each year stands at approx. 300-400 people.

Background

In light of the transformative impact of artificial intelligence and data science on research and development across industries such as manufacturing, infrastructure, defense, healthcare, pharmaceuticals, materials, and others, and given the expected expansion and acceleration of these effects, many countries around the world have decided to concentrate special efforts on advancing these fields.

According to the Telem Forum (Israeli cross government collaboration forum for R&D infrastructure), there are several challenges related to the core of AI Talent in the field of artificial intelligence⁴, such as the limited number of faculty members at universities alongside a growing trend of faculty transitioning from academia to corporate research centers. Additionally, there are clear indications of a shortage of technological professionals in the industry coupled with significant difficulties in recruiting them.⁵

At the end of 2023, the Samuel Neaman Institute conducted a survey for the Innovation Authority to identify demand for skilled AI professionals (mainly data engineers and data scientists - see definitions below). This survey highlighted a shortage of AI experts (advanced degree graduates), and the existence of a possible bottleneck in the ability of tech companies to create AI based innovation. The survey findings led to the implementation of several policy measures, that were aimed to increase the number of AI experts in the high-tech industry, including:

- Proactive efforts to increase the number of foreign experts working in Israel, with a focus on three relevant groups: returning residents, new immigrants, and foreign experts.
- Retraining programs for research graduates from other scientific fields to become data scientists, by filling essential knowledge gaps required in artificial intelligence.
- Launching an IDF program for AI experts, integrating advanced academic studies with practical training within the military service framework.

AI is fundamentally transforming a wide range of industries, and these impacts are expected to expand and accelerate in the coming years. In order to play an active role in this transformation and allow groundbreaking AI based innovation, the tech industry in Israel requires competent and experienced AI professionals, especially graduates of advanced academic degrees. The quality of academic training and the caliber of students in Israel are high, however, the limited number of faculty in the field, the transitioning of academic staff to corporate research centers, and the outflow of high-quality AI Talent to leading innovation countries pose challenges. These factors hinder both the expansion of student training capacity and the later availability of AI

⁴ The core of AI Talent in this context relates to individuals researching AI-related technologies, such as Machine Vision, Computer Vision, Deep Learning, Data Analytics, NLP, Image processing, and more.

⁵ Artificial Intelligence and Data Science Committee, December 2020 ([link](#))

developers to Israeli companies. The current study aims to assess both the present and anticipated near-future demand for employees who are central to companies' innovation efforts. It operates under the assumption that a demand significantly exceeding supply creates a bottleneck, hindering companies' ability to generate meaningful innovation.

Research Objective

Assessing the current and near-future shortfall in research personnel within the core domains of artificial intelligence in the industry, with the aim of supporting the Innovation Authority in formulating policies to mitigate this shortage.

Methodology and research stages

1. Defining the research population

The study is based on a survey distributed among technology companies engaged in the development of artificial intelligence in Israel. The database, which includes the details of these companies and contacts, was purchased from IVC in accordance with the technology tags defined by the research team at the Neaman Institute together with the Innovation Authority (the full list of tags appears in Appendix 3: List of technological tags used to identify the corporate population).

The main challenge in defining the population of companies engaged in research and development in the core domains of artificial intelligence is to choose between companies for which artificial intelligence is a central core component (and therefore have potential demand for employees in the field) and other companies.

In addition to identifying the companies, the roles relevant to the study must be defined. Currently, there is no clear and accurate definition of what an 'artificial intelligence workforce' is, and what knowledge is required of this workforce. Moreover, since this is a dynamic field by nature, even if there was such a definition at a certain point in time, it would have to undergo constant modifications to reflect the rapid pace of changes in artificial intelligence and the workforce⁶.

In light of this, a number of sources have been used⁷, and consultations have been held in order to define who are the employees engaged in development in the core domains of artificial intelligence relevant to the purpose of the current study.

The definitions included three main occupations:

1. **Data scientists** – who lead a research team, perform experiments, and build machine learning models.
2. **Data engineers** (e.g. data engineers, junior data scientists, etc.) - responsible for making the appropriate information available to data scientists or assisting leading researchers in the development of the models themselves.

⁶ Gehlhaus, D., & Mutis, S. (2021). The U.S. AI workforce: Understanding the supply of AI talent. Center for Security and Emerging Technology. <https://doi.org/10.51593/20200068>

⁷ For example: AI Core Roles and Responsibilities by Gartner ([link](#))

3. **ML-Ops** are responsible for the implementation of real-world models, the flow of information through the model, automation, control of ongoing operations, variants, cost efficiency, etc.

Analysis of the findings refers to each type of role separately, but it should be borne in mind that there **may be employees of one type reported** as belonging to the other occupational group, and vice versa.

2. Questionnaire Structure

The questionnaire included two main components:

1. **A question aimed at deciphering whether the company is engaged in development in core domains of artificial intelligence and what is their demand for AI talents**
2. **Questions on attitudes toward hiring foreign employees**

The full questionnaire appears in Appendix 4: Survey Questionnaire.

3. Distribution of the questionnaire

The surveys were sent in March 2025 using the Lime Survey system to CEOs and CTOs in relevant companies, or to other managers and senior managers (if no email address of the technology manager was obtainable).

In April and May 2025, intensive actions were taken to increase the response rate among the companies:

- **3 reminders were sent through the survey system.**
- **An attempt was made to reach out to hundreds of the companies by phone and calls were made with dozens of them.**
- **A personal request was made by the Innovation Authority to the largest companies in the field, requesting the completion of the questionnaire.**

4. Analysis of survey results

Upon closing of the survey in mid-May 2025, the analysis of the results began. In order to estimate the demand for jobs, the level of statistical representation of the sample was examined in relation to the entire population of companies, in terms of company sizes, industry sector and lifecycle stage. A proper representation was found by company size and stage, but there was underrepresentation of companies from the software sector (M-Test analysis, Appendix 1). Accordingly, the estimation calculations included appropriate weighting to correct for the bias.

In order to assess the uncertainty in the estimation of demand for employees, a lower bound to demand was calculated at a 95% confidence level, based on the rate of recruiting companies and their average and variance in demand.

Research population

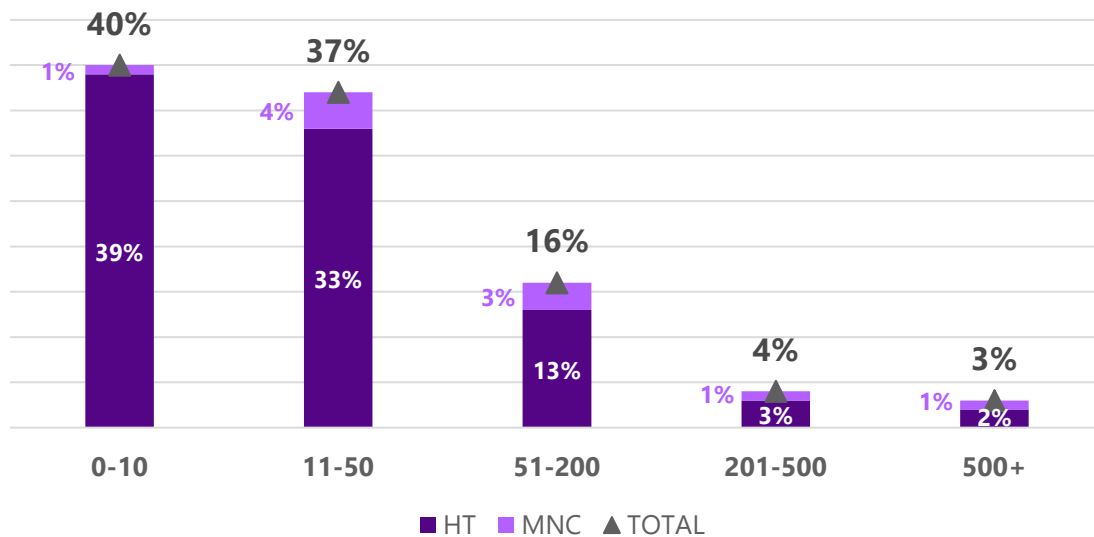
The number of companies engaged in research and development of artificial intelligence ("AI companies") in Israel is 2,158, of which 1,959 are Israeli companies and 199 multinational companies. This number is similar to the number of companies that was estimated in mid-2023, when the number of companies stood at 2,348.

The data regarding the number of companies also corresponds to estimates recently made by a number of bodies, see Table 1.:

Table 1: Various estimates of the number of AI companies in Israel from recent times:

Assessing body	Evaluation	Source
Deloitte Catalyst, F2 Venture Capital and Google Cloud Israel: Israel's AI Expansion Blueprint Report, 2024	+2,150 startups leverage AI in their core offering	https://www.israels-ai-blueprint-report.com/
RISE: Israel's Standing in the Artificial Intelligence Race, May 2024	There are currently approx. 2,300 artificial intelligence companies operating in Israel,	https://www.storydoc.com/5d662c0f663f17d29047f62992d9038e/a952fce0-3bbe-4066-8a11-6b2e7c356574/6641eff080e20dbecbf4503c
OECD Economic Surveys: Israel 2025	2300	https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/04/oecd-economic-surveys-israel-2025_18e45b04/d6dd02bc-en.pdf?utm_source=chatgpt.com

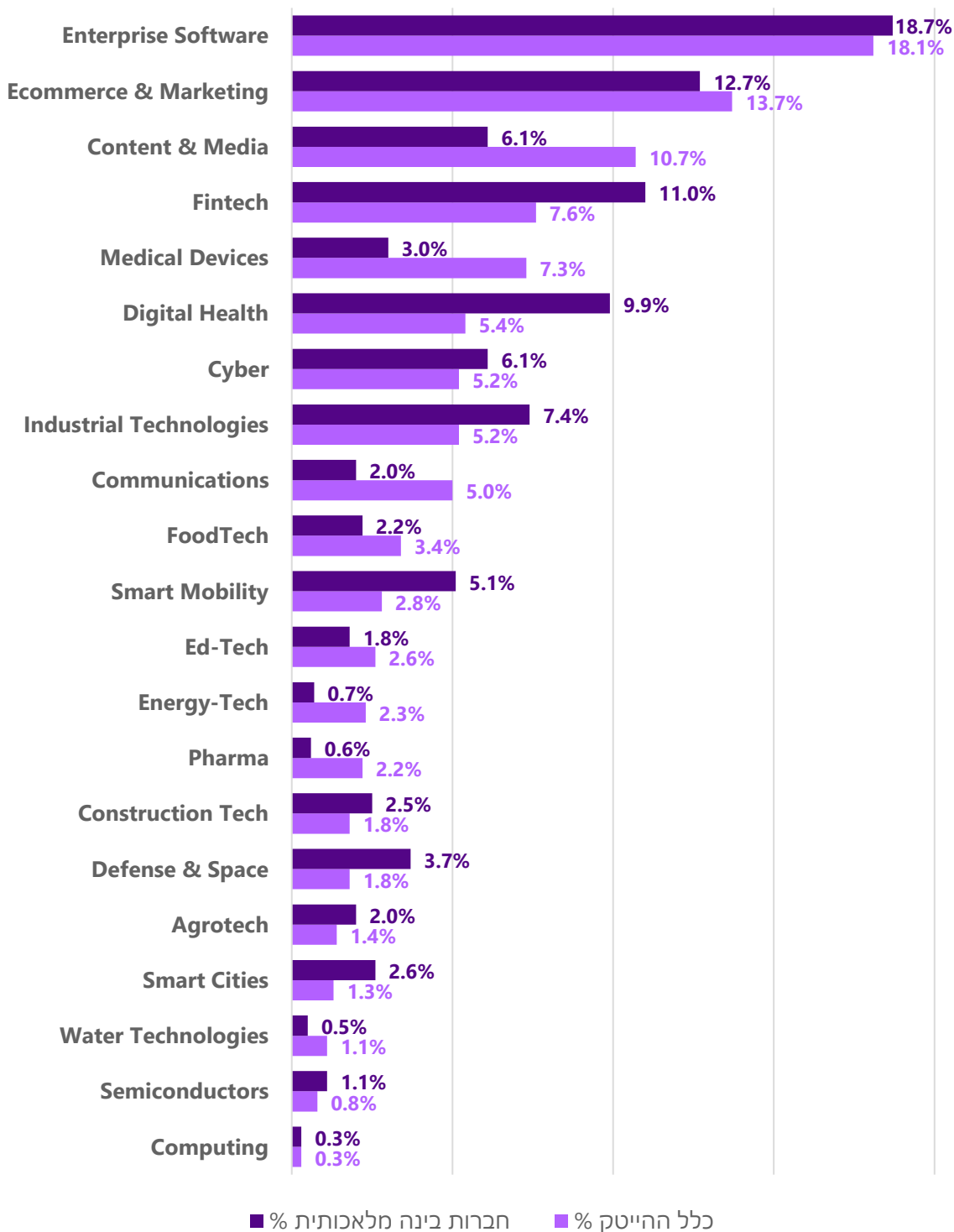
Figure 1: Distribution of AI companies by company size (N=2,158)



Source: Processing of IVC data by the Samuel Neaman Institute

The following figures present the characteristics of the AI companies, alongside the characteristics of all the high-tech companies in Israel.

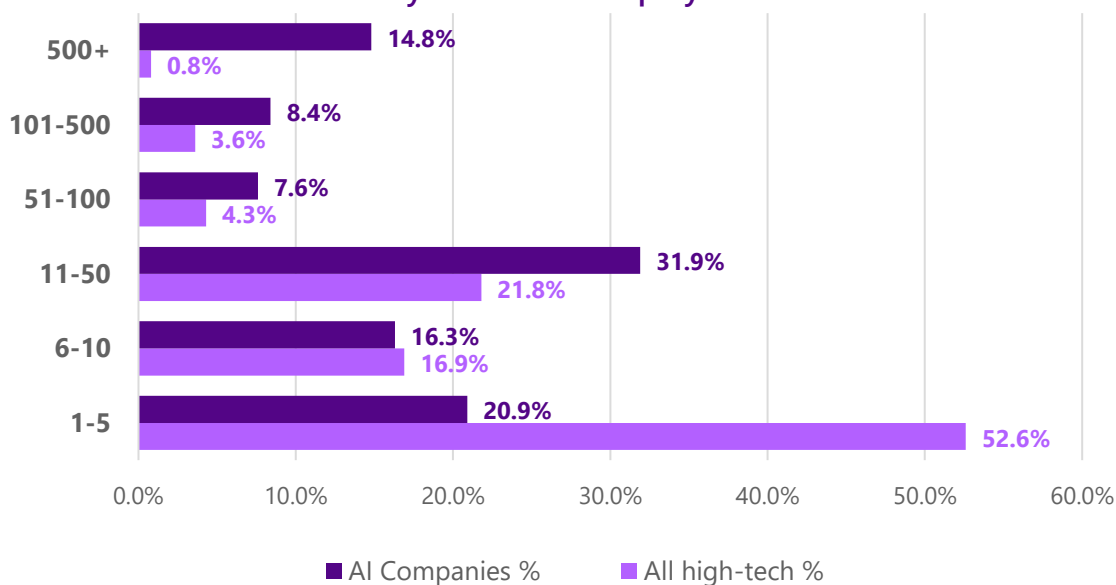
Figure 2: Distribution of high-tech and artificial intelligence companies – by sector



Source: Processing of IVC data by the Samuel Neaman Institute, and the Innovation Authority

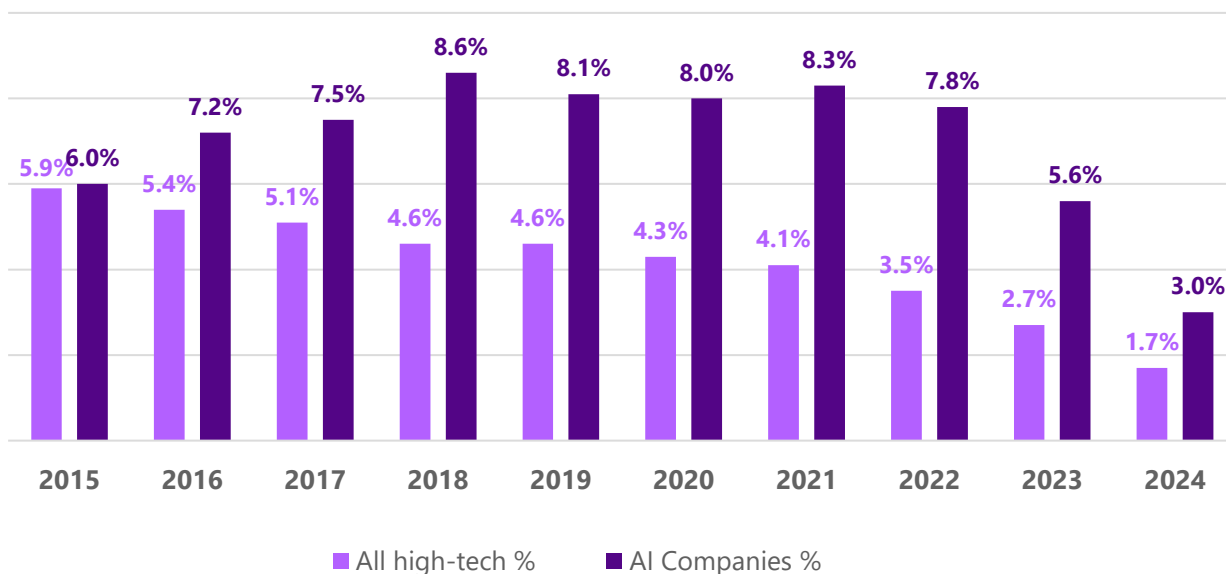
The following graphs demonstrate that artificial intelligence companies in Israel tend to mature more successfully, employ more talents, raise more capital, and are on average at a more advanced stage in their life cycle:

Figure 3: Distribution of high-tech and artificial intelligence companies – by number of employees



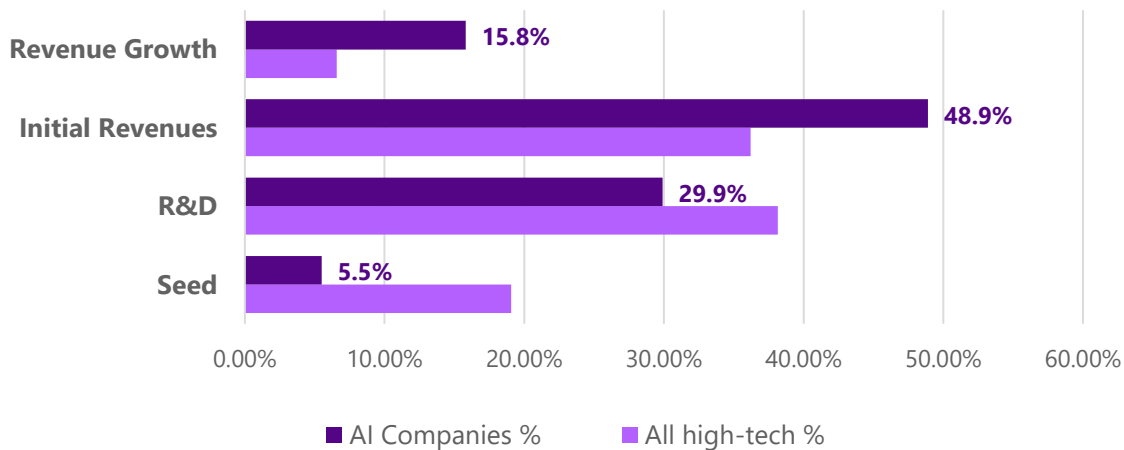
Source: Processing of IVC data by the Samuel Neaman Institute, and the Innovation Authority

Figure 4: Artificial Intelligence companies compared to all high-tech companies by the company's year of establishment (2015-2024)



Source: Processing of IVC data by the Samuel Neaman Institute, and the Innovation Authority

Figure 5: AI companies compared to all high-tech companies by financing stage

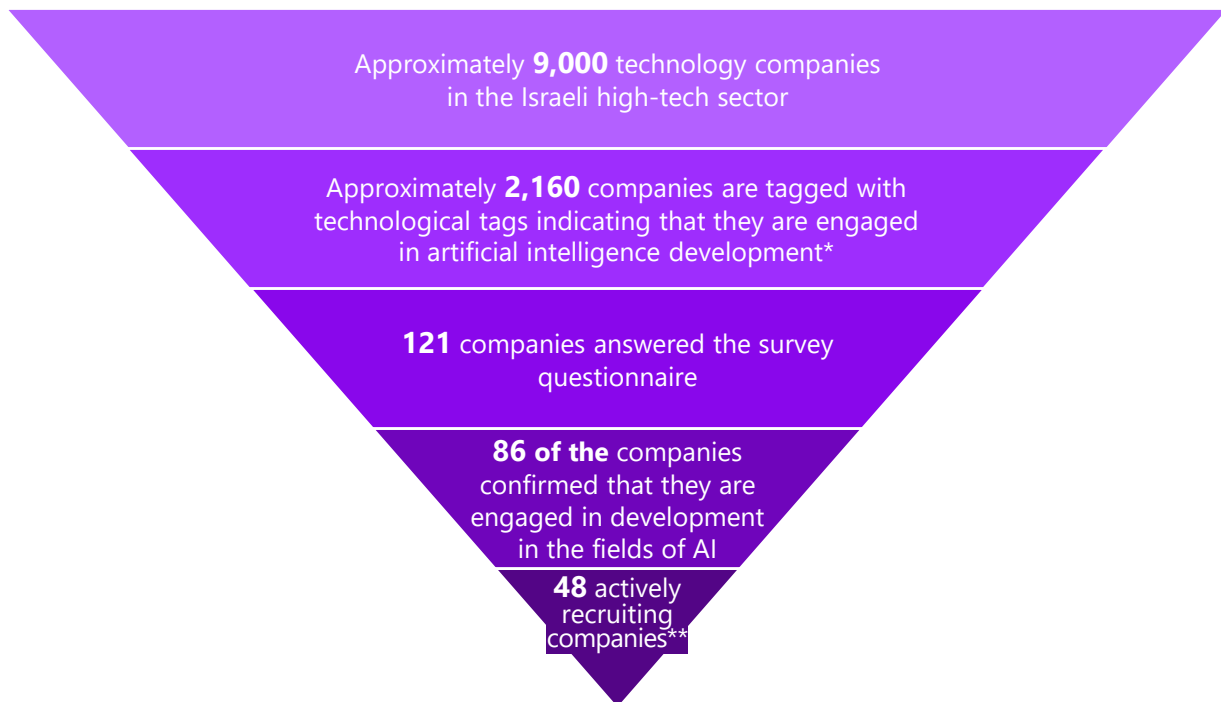


Source: Processing of IVC data by the Samuel Neaman Institute,
and the Innovation Authority

The sample

- A. Full responses were received from 121 technology companies (all appeared in the list of companies received from IVC – see methodology).**
- B. The response rate is 5.6% of all active companies (2,158 active companies tagged with the relevant technological tags in the IVC database). This rate is lower than the response rate in the previous survey, which stood at approx. 7.8%.**
- C. 86 of the companies (about 71% of the responses) reported that they are engaged in the development of artificial intelligence and the rest stated that they are not engaged in the development of artificial intelligence.**
- D. Of the companies that reported being engaged in AI development, 54 are actively recruiting (63% of those that indicated involvement in AI development).**

Figure 6: Response rate to the questionnaire among high-tech companies and AI Companies



* According to IVC database tags, see Appendix 3: List of technological tags used to identify the corporate population.

** Not Including 6 companies employing over 500 employees, which were excluded when calculating the demand for employees in the population – see details below.

Estimated demand for talent

Demand for talents in the core domains of artificial intelligence in Israel at the time of the survey is estimated at 2,434 employees (data scientists, data engineers, MLOps and others). The lower bound of the estimation is 1,895 employees, with a confidence level of 95%. (detailed calculations can be found in Appendix 2: Estimation and margin of error calculation for the number of employees required in the target population).

This figure does not include technology companies that employ over 500 employees. The sample includes 6 companies of this type, who reported demand of between 4 and 15 employees per company, SD 5.5 employees). Due to the low number of such companies in the sample and due to the high variability in the scope of demand, it is not possible to reliably estimate the demand in this group of companies. A conservative estimate of the demand in companies of this group stands at approx. 220 employees⁸.

The company population and sample did not include non-technology companies, such as universities and colleges, research institutes, consulting firms, infrastructure and financial companies, or defense industry companies as a whole.

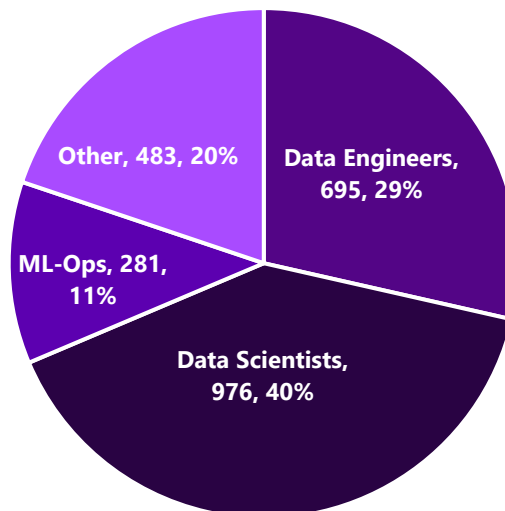
In a previous survey conducted in June-August 2023, the total demand for employees (data scientists, data engineers, MLOps and others) stood at approx. 3,400 employees.

Estimation of demand according to job types:

40% of the demand (976 employees) is for data scientists (leaders of research teams, experiment operators, and programmers of machine learning models), and 28% of the total demand (695 employees) is for data engineers (responsible for making the appropriate data available to data scientists or assisting lead researchers in developing the models themselves). 12% of the demand (281 employees) is for ML-Ops specialists, who are responsible for implementing models in real-world environments, managing data flow through the model, automation, monitoring day-to-day operations, version control, cost-efficiency, and more. 20% of the demand (483 employees) is for roles classified as "other," without specification of the exact type of position.

⁸ Six companies with over 500 employees that responded to the survey reported a total demand of approximately 40 employees at the time of the survey. In addition, the lower bound for demand in this group of companies, calculated using the Bootstrap method, is 228 employees. The lower bound is based on a conservative estimate of 0.68 for the percentage of recruitment in these companies, which was obtained using the Wilson method.

Figure 7: Distribution of professional roles among AI-related positions required by companies in the industry, Number of positions and their share of total AI professional roles

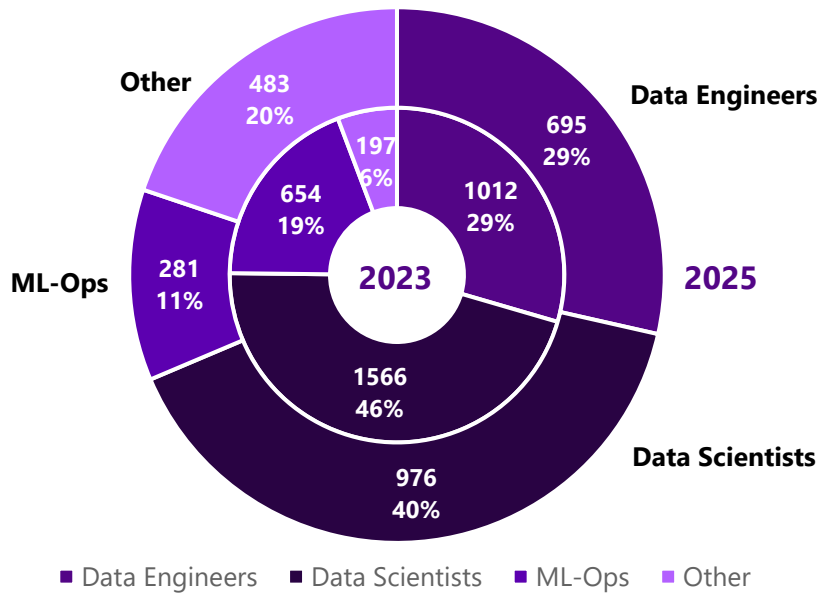


Processed by the Samuel Neaman Institute based on data from AI Talent survey dated Apr-May 2025. The number of respondents to the survey questions is N=48

The estimate indicates a change in demand for employees between the 2023 survey and the 2025 survey, not only in the number of employees, but also in the type of professional role. Particularly notable trend is the increase in the type of "other" employees from 6% in 2023 to approx. 20% in 2025.

The survey did not examine the reasons for the increase in demand for "other" employees, and therefore it is necessary to examine whether the reasons are related to a change in the job definitions of AI experts, or whether there is another reason for this increase.

Figure 8: Distribution of professional roles among AI-related positions required by companies in the industry, Number of positions and their share of total AI professional roles – comparison of 2023 and 2025 surveys



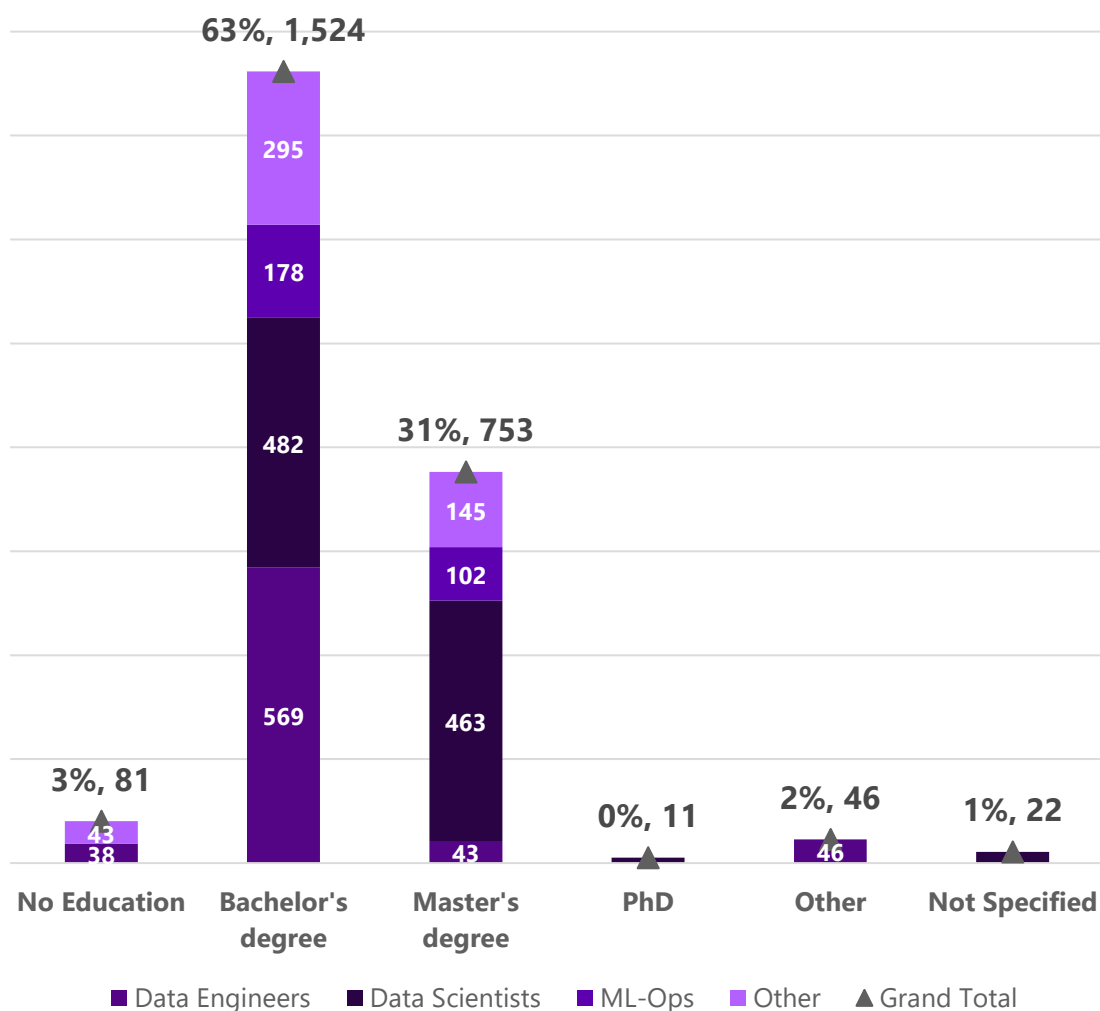
Processed by the Samuel Neaman Institute based on data from AI Talent surveys dated July-Sep 2023 & Apr-May 2025. The number of respondents to the survey questions is N=48

Estimating demand for employees by level of education

As can be seen in Figure 6, approx. 63% of the demand is for bachelor's degree graduates (1,524 employees) and 35% of the demand is for master's degree graduates (753 employees).

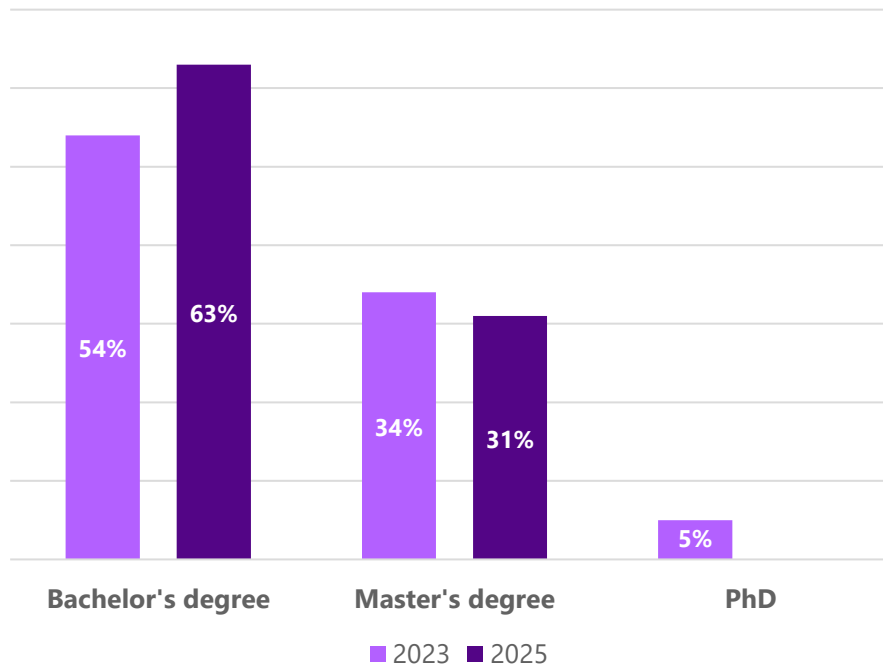
Demand for employees without academic qualifications remains low (approx. 3%) demand for PhD graduates is even lower (less than 1%). Nevertheless, a master's degree is likely considered a minimum threshold, with doctoral graduates enjoying a competitive advantage in securing roles that require high-level academic expertise

Figure 9: Distribution of demand for AI talent in the high-tech industry, Number of positions by level of education



Processed by the Samuel Neaman Institute based on data from AI Talent survey dated Apr-May 2025. The number of respondents to the survey questions is N=48

**Figure 10: Distribution of demand for AI talent in the high-tech industry,
Number of positions by level of education - Comparison of 2023 and 2025 surveys**



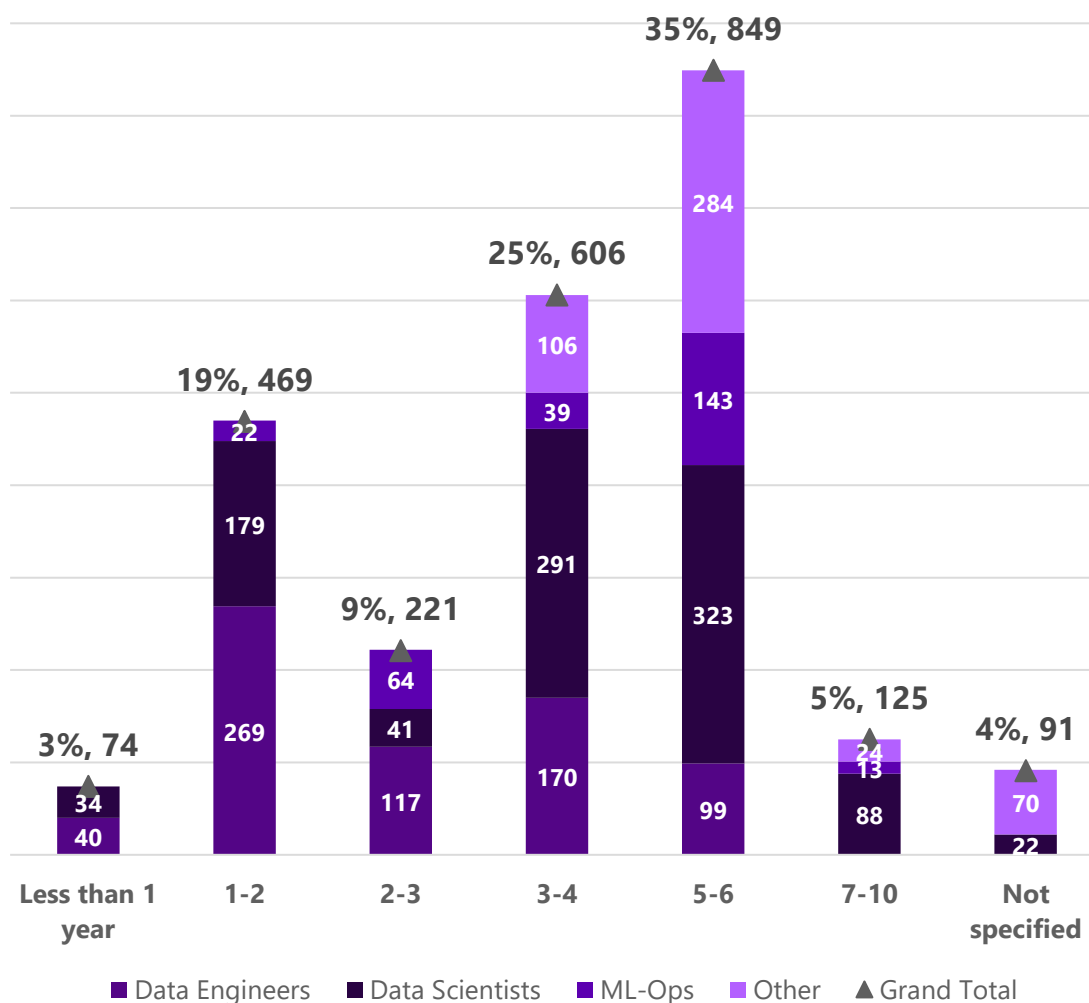
Processed by the Samuel Neaman Institute based on data from AI Talent surveys dated July-Sep 2023 & Apr-May 2025. The number of respondents to the survey questions is N=48

A comparison of the educational profile of employees sought in the core domains of artificial intelligence between 2023 and 2025 (Figure 10) shows no significant difference in demand based on level of education ($\chi^2 = 3.9, p > 0.05$).

Estimation of demand by experience

Approx. 60% of the demand is for employees with 3-6 years of experience, and approx. 28% of the demand is for employees with 1-3 years of experience (**Figure 11**).

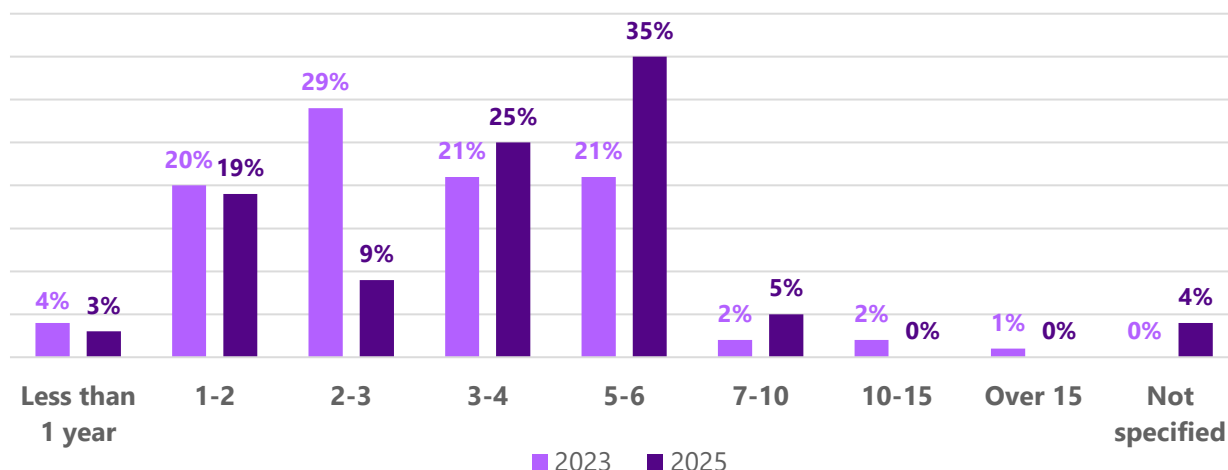
Figure 11: Distribution of demand for talents in the artificial intelligence industry among the sector's companies, Number of positions by years of experience



Processed by the Samuel Neaman Institute based on data from AI Talent survey dated Apr-May 2025. The number of respondents to the survey questions is N=48

When comparing the 2023 and 2025 surveys, there was a significant difference in demand for jobs in the core domains of artificial intelligence according to different levels of experience ($\chi^2 = 13.8, p < 0.05$). Figure 12 shows a decrease in demand for less experienced developers (from 53% demand for talents with up to 3 years' experience in 2023 to 31% in 2025) and an increase in demand for experienced talents (from 44% demand for talents with three to 10 years' experience in 2023 to 65% demand in 2025).

Figure 12: Distribution of demand for talents in the field of artificial intelligence among the sector's companies, Number of positions by years of experience – Comparison of 2023 and 2025 surveys



Processed by the Samuel Neaman Institute based on data from AI Talent surveys dated July-Sep 2023 & Apr-May 2025. The number of respondents to the survey questions is N=48

Estimating demand according to a combination of level of education and experience:

According to the survey data, demand at the time of the survey is primarily focused on employees with a bachelor's degree and 1–6 years of experience, as well as employees with a master's degree and 3–6 years of experience (Figure 14).

Figure 13: Distribution of demand for AI talent in the high-tech industry, Number of positions by combined cross-section of level of education and experience

Education Level	Not specified	Less than 1 year	1-2	2-3	3-4	5-6	7-10
PhD						11	
Master's degree		34	46		163	421	88
Bachelor's degree	70	17	401	221	385	393	37
No Education		23			57		
Not specified + other	22		22			24	

Processed by the Samuel Neaman Institute based on data from AI Talent survey dated Apr-May 2025. The number of respondents to the survey questions is N=48

A comparison with the demand estimates from the 2023 survey indicates a trend of shifting from demand for employees with up to three years of experience to demand for more experienced talents, both among bachelor's and master's degree holders.

Figure 14: Distribution of demand for AI talent in the high-tech industry, Number of positions by combined cross-section of level of education and experience – comparison of 2023 and 2025 surveys

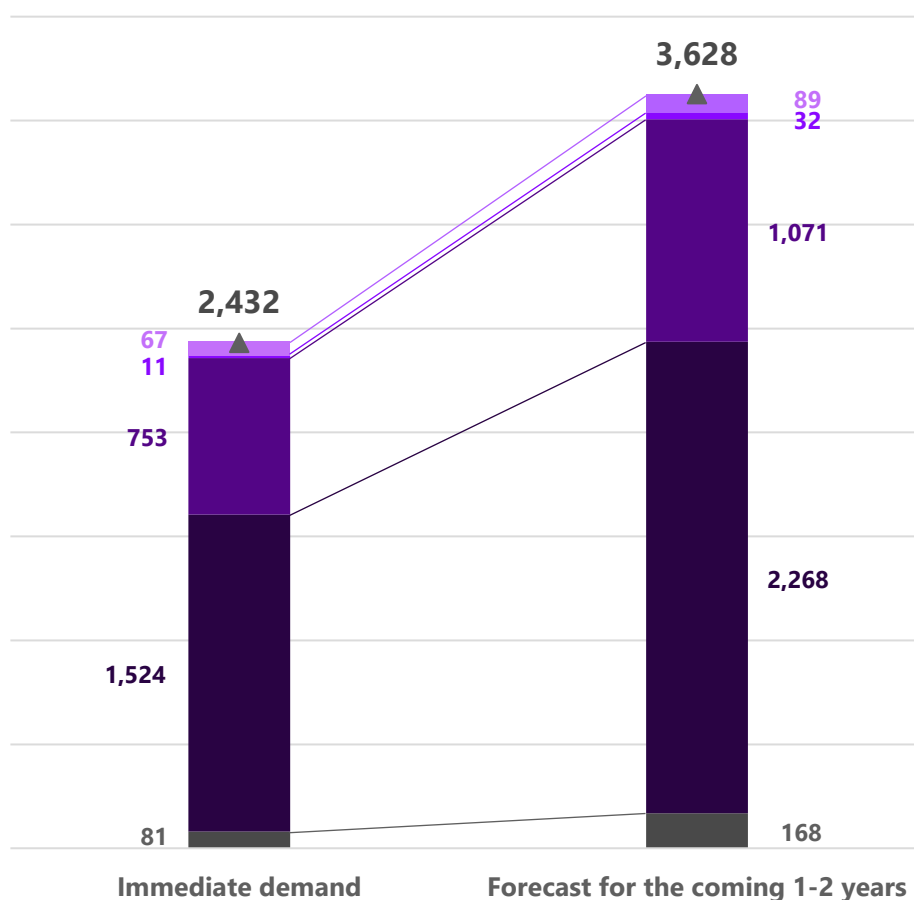
2023						
PhD	0%			2%		3%
Master's degree	0%		7%	7%	5%	12%
Bachelor's degree		3%	11%	19%	13%	5%
	Not specified	Less than 1 year	1-2	2-3	3-4	5-6
						7-10
2025						
PhD					0%	
Master's degree		1%	2%		7%	17%
Bachelor's degree	3%	1%	17%	9%	16%	16%
	Not specified	Less than 1 year	1-2	2-3	3-4	5-6
						7-10

Processed by the Samuel Neaman Institute based on data from AI Talent surveys dated July-Sep 2023 & Apr-May 2025. The number of respondents to the survey questions is N=48

Forecast for the coming 1-2 years

The following figure shows the demand forecast in a year or two, for **those positions that currently have immediate demand**. As can be seen, there is an expectation of an increase in demand for such jobs.

Figure 15: Estimate of immediate and forecasted demand for the coming 1-2 years by level of education.



■ No education ■ Bachelor's degree ■ Master's degree ■ PhD ■ Other or unspecified ▲ Grand Total

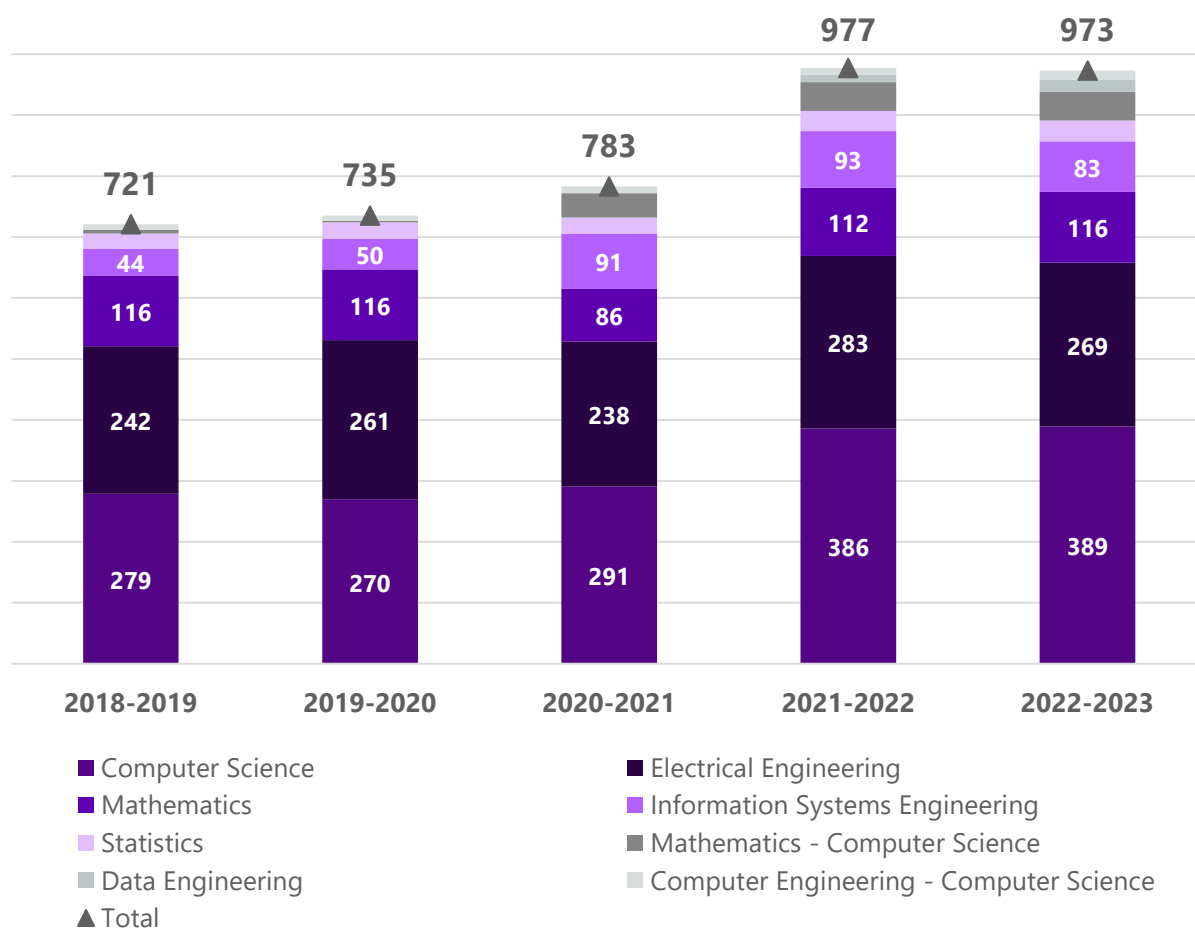
Source: Samuel Neaman Institute

Talent availability (M.Sc and PhD graduates)

Data from the Israeli Central Bureau of Statistics⁹, shows that in 2023 (5783) a total of 970 students completed advanced research degrees (master's degree with a thesis and a doctoral degree), in domains relevant for integration into research positions in the fields of artificial intelligence in the industry. These graduates, the vast majority of whom come from the professions of **mathematics, computer science and electrical engineering**, are the repository of AI Talent available to the entire economy.

Assuming an average of approx. 30-40% of the research graduates in the relevant professions will be employed as AI experts in the industry, the number of graduates added to the industry each year is approx. 300-400 people.

Figure 16: Change in research degree graduates (master's degree with a thesis and doctoral degree) in computer science, electrical engineering and mathematics in the years 2018/19 to 2022/23 - according to subject

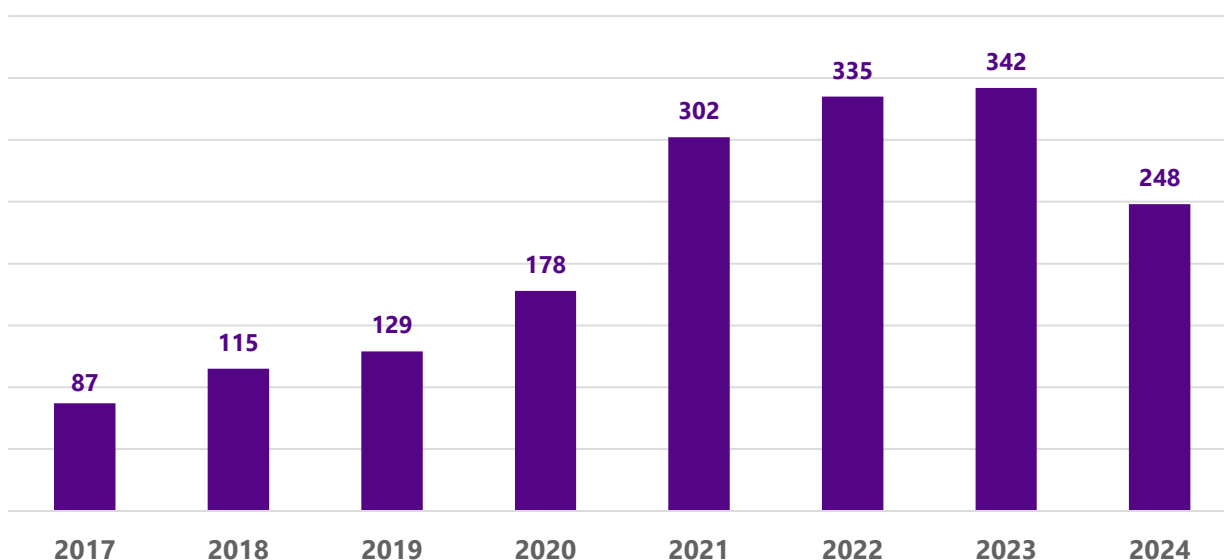


Source: Processing of CBS data by the Samuel Neaman Institute

⁹ Israeli Central Bureau of Statistics, Table 3.8.- Degree recipients from universities in selected subjects by degree and gender.

The increase in the number of graduates between the academic year 2020 and the academic year 2022, is also reflected in the number of graduate theses submitted in these years on subjects related to the fields of AI. The following figure shows the number of theses submitted by years:

Figure 17: Number of theses submitted in Israel on the subject of AI (not including the Weizmann Institute)¹⁰ – by years



Source: [Neaman Index | Research and Innovation in Artificial Intelligence - AI](#) - Samuel Neaman Institute

¹⁰ The search was conducted in March 2025 in the [Consolidated Catalogue of Israel Libraries \(ULI\)](#). The data refers to theses from all advanced degrees. The results are based on the database classifications. Each thesis can be classified into several subjects. Topics surveyed: Artificial Intelligence; Machine Learning; Deep Learning; Neural networks (Computer Science); Natural Language Processing; Reinforcement Learning; Computational Learning

Employment of talents from abroad

Since the number of graduates of research degrees applying for work in research and development in the fields of artificial intelligence is lower than the demand for such employees, according to the assessment, the Innovation Authority has formulated a policy to reduce the gap. As part of this policy, the Authority carried out proactive activities to increase the number of foreign experts working in Israel, with a focus on three relevant groups: returning residents, new immigrants, and foreign experts.

At the request of the Israel Innovation Authority, this survey examined companies' attitudes toward hiring experts from foreign countries to address the gap between company demand and the existing talent pool.

The companies were asked the following question: In relation to the open positions listed in the table above, **will you also consider hiring foreign experts, as a solution to reduce the gap at the company?**

The following is the distribution of the responses:

Table 2: Distribution of responses regarding the employment of foreign experts

		Percentage of companies	Number of companies
With regards to the open positions listed in the table above, will you also consider the employment of experts from foreign countries in order to address the gap at the company?	Yes	41%	35
	No	24%	20
	No response	36%	31
Total			86

Subsequently, the companies were asked to indicate **whether there was any restriction or barrier to the employment of relevant foreign experts**. The following is the distribution of the responses

Table 3: Distribution of responses regarding restriction / obstacle to the employment of foreign experts

		Percentage of companies	Number of companies
Is there any restriction or barrier to the employment of relevant experts from foreign countries	Yes	27%	23
	No	37%	32
	No response	36%	31
Total			85

All companies that responded that there is a restriction on the employment of experts (23 companies), specified what the restriction was. The companies' statements on the subject can provide an indication of the types of barriers that exist.

The types of barriers cited by the companies are: professional quality and organizational culture considerations, business and strategic restrictions, regulatory and legal aspects and considerations of adjusting time zones and ease of employment. Companies that deal with security applications or work with the Ministry of Defense have also noted security and classification considerations.

Research limitations

Research population

- There is currently no method that allows certain identification of companies engaged in development in the core domains of artificial intelligence in Israel. The list of companies used in this study is approximately that of the relevant active companies.
- The survey was not disseminated amongst companies and organizations that are not technology companies, such as universities and colleges, research institutes, consulting companies, infrastructure and financial companies, all defense industry companies, etc. There may be significant demand for employees in these organizations as well.

Sample

- The response rate to the survey is lower than desired and therefore the margin of error of the obtained estimates is relatively large (margin of error of approx. 600 employees in estimating demand).
- There may be a response bias in the survey in favor of companies that are currently recruiting development employees in the core domains of artificial intelligence.
- The calculation of demand estimates is based on the assumption that the rate of companies recruiting in the population is the same as the rate of companies recruiting in the sample. To address a possible violation of this assumption, lower bound for demand were calculated, taking into account the uncertainty in the recruitment rate.

General

- The data is correct for the local and global economic and geopolitical situation during the survey period (March-May 2025). Employee demand may be affected by local and global events.
- The study reviews the demand and supply trends for employees in the core professions of artificial intelligence and indicates changes in level of education and experience requirements compared to a previous study. However, the study does not provide an interpretation of these changes.

Appendix 1: Sample representation by company size, sector and recruitment stage

Table 4: Level of representation of sample data by company size

Company size	In the population	In the sample	Population rate	Anticipated number in the sample	Standard deviation	Z	Level of representation
0-10	859	50	0.41	46.9	5.3	0.59	Proper representation
11-50	795	43	0.38	43.4	5.2	-0.08	Proper representation
51-200	338	16	0.16	18.5	3.9	-0.63	Proper representation
201-500	95	5	0.05	5.2	5.3	-0.09	Proper representation

Threshold value for a 5% significance level, with Bonferroni correction for 4 comparisons: 2.24

Table 5: Level of representation of sample data by sector

Sector	In the population	In the sample	Population rate	Anticipated number in the sample	Standard deviation	Z	Level of representation
Software	1188	52	0.57	65.2	5.3	-2.49	Missing representation
Life Sciences	323	23	0.16	17.7	3.9	1.36	Proper representation
Miscellaneous Technologies	227	16	0.11	12.5	3.3	1.06	Proper representation
Communications	161	9	0.08	8.8	2.9	0.06	Proper representation
Agritech	83	8	0.04	4.6	2.1	1.65	Proper representation
Semiconductors	50	4	0.02	2.7	1.6	0.77	Proper representation
Cleantech	46	2	0.02	2.5	1.6	-0.33	Proper representation

Threshold value for a 5% significance level, with Bonferroni correction for 7 comparisons: 2.45

Table 6: Level of representation of sample data by funding stage

Stage	In the population	In the sample	Population rate	Anticipated number in the sample	Standard deviation	Z	Level of representation
Initial Revenues	957	56	0.50	54.1	5.2	0.40	Proper representation
R&D	585	38	0.31	33.1	4.8	1.03	Proper representation
Revenue Growth	261	8	0.14	14.8	3.6	-1.89	Proper representation
Seed	108	6	0.06	6.1	2.4	-0.04	Proper representation

Threshold value for a 5% significance level, with Bonferroni correction for 7 comparisons: 2.24

Appendix 2: Estimation and margin of error calculation for the number of employees required in the target population

Table 7: Estimation and margin of error calculation for the number of employees required in the target population

Company size	Number of companies in the sample	Number of AI companies in the sample	Number of recruitment companies in the sample	Demand for employees in the sample	Demand variance	Number of companies in the population	Proportion of recruitment companies in the sample	Estimated number of recruiters in the population*	Estimation of population demand*	Number of companies in the sample
0-10	50	33	15	32	1.12	859	0.30	258	506.8	
11-50	43	28	16	35	2.43	795	0.37	296	650.0	
51-200	16	16	14	53	8.80	338	0.88	296	1158.6	
201-500	5	3	3	5	1.33	95	0.60	57	119.1	
Total	114	80	48	125	4.76	2087	0.42	9065	2434.5	1895
Over 500	7	6	6	43		71	Conservative estimate demand: 220			

* The sample contains an underrepresentation of the Software sector, thus, appropriate weighting was applied in calculating the demand estimates for the population.

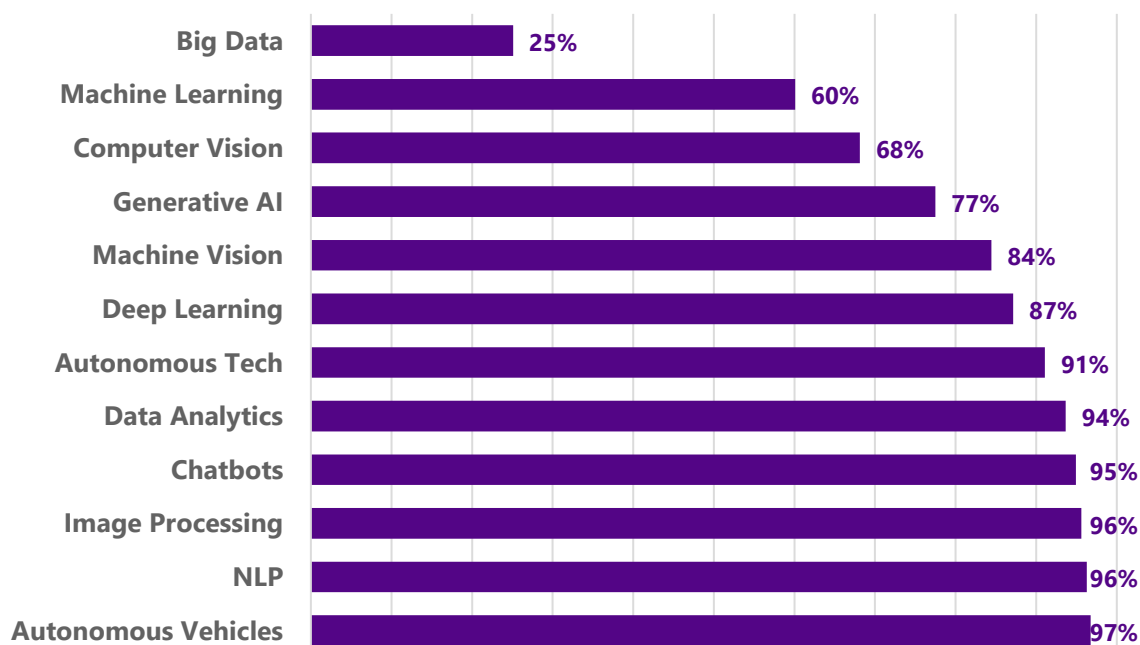
Appendix 3: List of technological tags used to identify the corporate population

1. In order to identify the technological tags that will assist in formulating a list of companies engaged in development in the core domains of artificial intelligence and with potential demand for development talents, all tags that may be relevant were first identified¹¹:

Artificial Intelligence (AI), Autonomous Shipping, Autonomous Systems, Autonomous Tech, Autonomous Vehicles, Big Data, Bioinformatics, Chatbots, Computer Vision, Conversational AI, Data Analytics, Data Processing, Data Science, Deep Learning, Deep Tech, Digital Health, Generative AI, Image Processing, Image Recognition, Large Language Model (LLM), LLMOps, Machine Learning, Machine Vision, MLOps, Neural Networks, NLP, Predictive Analytics, Speech Recognition, Vertical AI

2. Next, we'll look at which tags are most commonly used in the database by companies:

Figure 18: Common technology tags in the Artificial Intelligence industry among companies in the IVC Database



Source: Processing of IVC data by the Samuel Neaman Institute

¹¹ The tag "Artificial Intelligence" itself was not used, in order to obtain an accurate list of companies engaged in core AI technologies and to exclude companies that merely use AI without engaging in research and development in the field.

Ultimately, it was decided to use the following tags that cover an extensive corporate population and which indicate with high probability the existence of research and development in the core domains of artificial intelligence within the company:

- **Big Data**
- **Machine Learning**
- **Computer Vision**
- **Generative AI**
- **Machine Vision**
- **Deep Learning**
- **Autonomous Tech**
- **Data Analytics**
- **Chatbots**
- **Image Processing**
- **NLP**
- **Autonomous Vehicles**

Appendix 4: Survey Questionnaire



Thank you for your willingness to assist the Israel Innovation Authority and the research team at the Samuel Neaman Institute for National Policy Research in estimating the extent of the skilled AI Talent capital shortage in the core domains of artificial intelligence!

To participate in the survey, click the "Next" button.

For further details and help filling out the questionnaire, you can contact Oshrat Katz Shaham at oshrat@sni.technion.ac.il

Questionnaire completion time approximately 3 minutes

There are 13 questions in this survey.

Company Name: *

Please enter your response here:

Role in the company: *

Please enter your response here:

Is your company engaged, in part, in research and development (R&D) activities in the core domains of artificial intelligence?

For example: Machine Learning, Big Data, Machine Vision, Computer Vision, Deep Learning, Data Analytics, NLP, Generative AI, Predictive Analytics, Image Processing, etc. *

Please select one of the following answers

Please select one of the following options

☐ Yes

☐ No

Please complete the following table regarding the demand for employees in core research and development roles in the field of artificial intelligence:

Answer this question only if the following conditions are met :

For example: In response to question [[Q01]], if the answer was 'Yes', the company indicated domains such as Machine Learning, Big Data, Machine Vision, Computer Vision, Deep Learning, Data Analytics, Natural Language Processing (NLP), Generative AI, Predictive Analytics, Image Processing, etc.

	How many additional employees of this type do you estimate will be required in the next year or two?	How many employees of this type was the company seeking to recruit two years ago?	How many employees of this type was the company seeking to recruit a year ago?	How many employees of this type is the company currently seeking to recruit?	How many employees of this type is the company currently employing	Minimum years of experience required	Minimum education required	Job Type
1								

To add details of another position, select 'Additional Position' *

Answer this question only if the following conditions are met :

For example: In response to question [[Q01]], if the answer was 'Yes', the company indicated domains such as Machine Learning, Big Data, Machine Vision, Computer Vision, Deep Learning, Data Analytics, Natural Language Processing (NLP), Generative AI, Predictive Analytics, Image Processing, etc.

Please select one of the following answers
Please select one of the following options

- ☐ **Additional Position**
- ☐ **No additional position**

Please complete the following table regarding the demand for employees in core research and development roles in the field of artificial intelligence:

Answer this question only if the following conditions are met :

(To add details of an additional position select "Additional Position") Answer was 'Additional Position' at question' [[G01Q07]'

	How many additional employees of this type do you estimate will be required in the next year or two?	How many employees of this type was the company seeking to recruit two years ago?	How many employees of this type was the company seeking to recruit a year ago?	How many employees of this type is the company currently seeking to recruit?	How many employees of this type is the company currently employing	Minimum years of experience required	Minimum education required	Job Type
2								

To add details of another position, select 'Additional Position' *

Answer this question only if the following conditions are met:

((("G01Q07.NAOK" == "AO01"))

Please select one of the following answers

Please select one of the following options

- ☐ **Additional Position**
- ☐ **No additional position**

Please complete the following table regarding the demand for employees in core research and development roles in the field of artificial intelligence:

Answer this question only if the following conditions are met :

(To add details of an additional position select "Additional Position") Answer was 'Additional Position' at question' [[G01Q07]'

	How many additional employees of this type do you estimate will be required in the next year or two?	How many employees of this type was the company seeking to recruit two years ago?	How many employees of this type was the company seeking to recruit a year ago?	How many employees of this type is the company currently seeking to recruit?	How many employees of this type is the company currently employing	Minimum years of experience required	Minimum education required	Job Type
3								

To add details of another position, select 'Additional Position' *

Answer this question only if the following conditions are met:

((("G01Q07.NAOK" == "AO01"))

Please select one of the following answers

Please select one of the following options

- ☐ **Additional Position**
- ☐ **No additional position**

Please complete the following table regarding the demand for employees in core research and development roles in the field of artificial intelligence:

Answer this question only if the following conditions are met :

(To add details of an additional position select "Additional Position") Answer was 'Additional Position' at question' [[G01Q07]'

	How many additional employees of this type do you estimate will be required in the next year or two?	How many employees of this type was the company seeking to recruit two years ago?	How many employees of this type was the company seeking to recruit a year ago?	How many employees of this type is the company currently seeking to recruit?	How many employees of this type is the company currently employing	Minimum years of experience required	Minimum education required	Job Type
4								

If you selected "Other" under type of employee, or under education, or experience, in the table, please specify the nature of the position, the required education, or the relevant experience.

Answer this question only if the following conditions are met: (Is your company engaged, in part, in research and development (R&D) activities in the core domains of artificial intelligence?

For example: In response to question [[Q01]], if the answer was 'Yes', the company indicated domains such as Machine Learning, Big Data, Machine Vision, Computer Vision, Deep Learning, Data Analytics, Natural Language Processing (NLP), Generative AI, Predictive Analytics, Image Processing, etc.

Please enter your response here:

With regards to the open positions listed in the table above, would you also consider employing experts from foreign countries to help meet your company's needs?

Please select one of the following answers

Please select one of the following options

- ☐ Yes
- ☐ No

Is there any restriction or barrier to the employment of such experts from foreign countries? If so, please briefly mention it in the comments

Please select one of the following answers

Please select one of the following options

☐ **Yes**

☐ **No**

Add a note to explain your choice

Thank you so much for completing the survey!

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