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RAISE

RAISE Observatory | Chronicles of Robotics Investments

Executive Summary

This report was prepared by the UniGe team in collaboration with the RAISE partners of SPOKE 5 “Transfer of knowledge and technology”. The data used includes information provided by CB Insights under a subscription agreement with UniGe. The analyses and interpretations presented are the result of research conducted by the UniGe team, with the support and validation of the RAISE partners. This report does not constitute financial, legal, or professional advice.

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Chronicles of Robotics Investments

| Introduction

Overview

Objective

This report presents a comprehensive investment analysis of the robotics sector at both national and international levels. It identifies and classifies key companies, startups, and investors within robotics.

The primary objective of this report is to build a knowledge base on investment trends, enabling the tracking of capital flows and identification of critical stakeholders. This initiative offers insights into market dynamics and emerging opportunities, empowering members of the RAISE ecosystem to develop compelling robotics solutions that attract global investors.

The analysis leverages data from the CB Insights platform and other external sources to provide a detailed overview.

Agenda

1. **Global Robotics Companies Overview:** This section examines leading robotics companies worldwide, exploring investments received across various industries. It highlights market leaders and underscores the pivotal role of key investors in shaping the global landscape.
2. **The \$1 Billion Robotics Club:** This section delves into companies valued at over \$1 billion, positioning them at the forefront of the robotics sector.
3. **Insights into Italian Robotics Ventures:** This section highlights Italy's pivotal role in the global robotics sector and explores noteworthy ventures and startups in Italy. It discusses key investors supporting the growth of these companies.
4. **Emerging Trends in European Robotics Startups:** This section focuses on the vibrant ecosystem of European robotics startups. It analyses investment trends, identifies key players, and provides insights into the evolving dynamics of the European robotics market.

Sample description

Definition

The sample comprises **robotic companies**, defined as enterprises focused on developing, designing, and commercialising advanced robotics technologies. These companies integrate multidisciplinary mechanical engineering, electronics, computer science, and artificial intelligence expertise to develop innovative robotic systems and automation. The technological solutions are applied across a diverse range of sectors, including manufacturing, healthcare, logistics, agriculture, and domestic services, showcasing the wide-reaching applications of robotics and the potential for innovation. These enterprises are characterised by a strong emphasis on research and development, a high capacity for innovation, and significant flexibility in adapting to market needs.

The analyses are carried out on **5,056 companies, of which 1,279 are startups**. Each company in our sample was chosen based on specific criteria that align with the definition provided for a robotics company. This sample includes companies developing autonomous ground robots, unmanned aerial vehicles, robotic arms, and underwater drones, among other robotic systems. This sample also contains companies developing operating systems and modules for robots.

Identification

Our methodology for company identification involved **4 steps**:

1. We thoroughly searched and assessed entities classified within the “**robotics**” **industry label** within the CB Insights platform.
2. To broaden our sampling, we included **specific cohorts** of companies highlighted in curated analyses by CB Insights’ experts, with a particular focus on robotics startups.
3. Additionally, we incorporated firms identified in **authoritative external reports** from institutions and consultancy firms, cross-referencing their data through the CB Insights platform.
4. Companies **lacking sufficient data** were **excluded** from the sample.

All **companies** featured in this report have been **verified and mapped using the CB Insights platform**. Those not included in the database were omitted to maintain consistency and evaluation uniformity. This verification process ensures the accuracy of our data. From their **inception**, we collected **all available funding round** data from the CB Insights platform for the 5,056 companies. The data spans from January 1995 to June 2024 and was last updated on 30th June 2024.

Sample(s)

The main sample
5,056 companies

\$1 Billion Robotics Club
39 companies

Ventures evaluated at over \$1 billion according to estimated market experts from various sources, as reported by CB Insights as of 30th June 2024.

Italian Robotics Ventures
85 companies

Ventures emerge using the country filter “Italy” within the primary sample.

European Robotics Startups*
349 companies

Startups were identified using this criteria:

- Companies established from 2014 (max 10 years).
- Companies have revived an investment from 01/01/2019 to 30/06/2024 (five years).
- The last investment round received was Convertible note; Angel; Seed; Serie A; were also included round related to Business Plan competition and Incubation/Acceleration.

The initial sample comprised 1,304 companies. After meticulous examination, 25 companies were excluded, leaving a final sample of 1,279 robotics startups worldwide.

The sample was further filtered based on the continent label "Europe".

*We adopted a broad definition of startups, widely recognised in the USA and by CB Insights. This definition encompasses ventures characterised by innovation, scalability, and high growth potential, regardless of their year of establishment or other formal regulatory aspects. The focus is on ventures in a rapid growth and expansion phase. Therefore, the primary criterion for identification is the type of the latest funding round, specifically targeting only early-stage investments within the last five years.

Executive Summary

This document provides a summary of the Global Robotics Companies Overview, the first analytical block of the full report. This section examines leading robotics companies worldwide, exploring investments across various industries, identifying key market players, and assessing the role of major investors in shaping the global landscape.

The complete report includes additional sections on:

- The \$1 Billion Robotics Club – Analysis of companies valued at over \$1 billion, positioning them at the forefront of the robotics sector.
- Insights into Italian Robotics Ventures – Overview of Italy's pivotal role in the global robotics sector, highlighting key ventures, startups, and investors driving growth.
- Emerging Trends in European Robotics Startups – Examination of the European robotics ecosystem, investment trends, key players, and market dynamics.

For access to the full report, please contact:

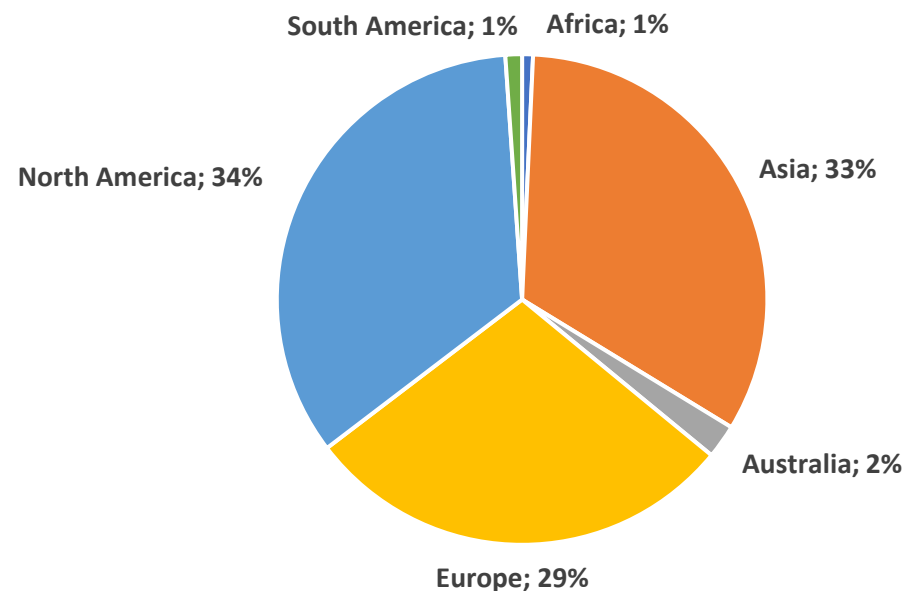
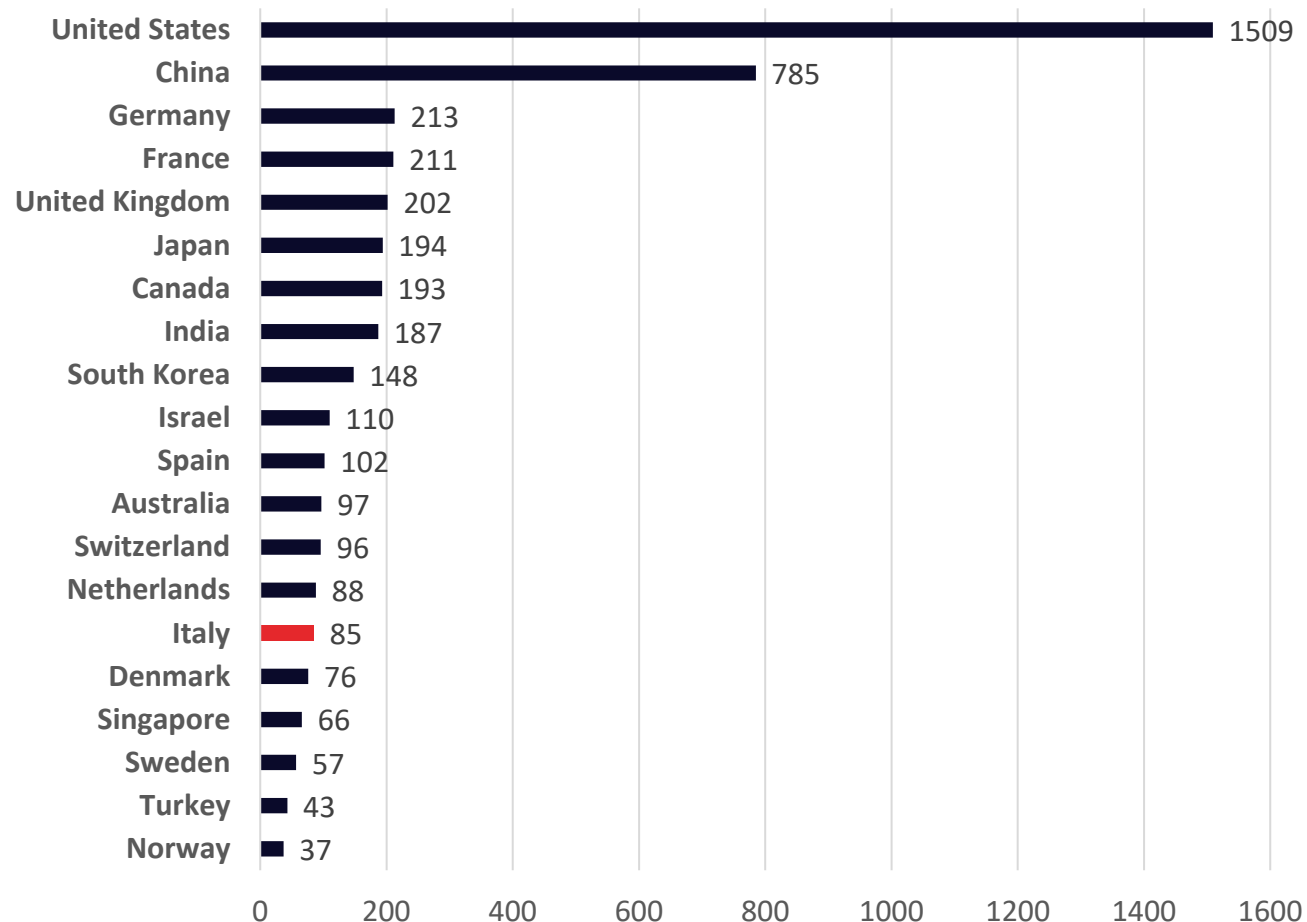
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Chronicles of Robotics Investments

| 1. Global Robotics Companies Overview

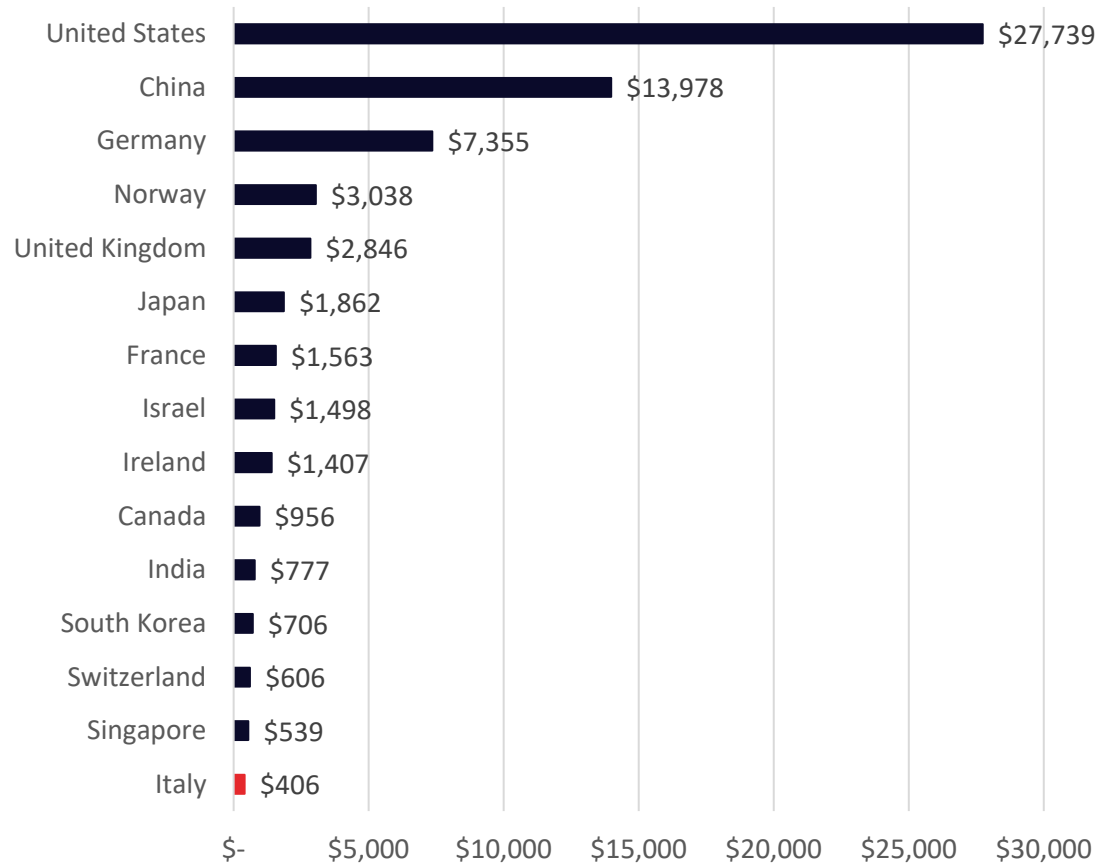
Geographical Distribution of Companies



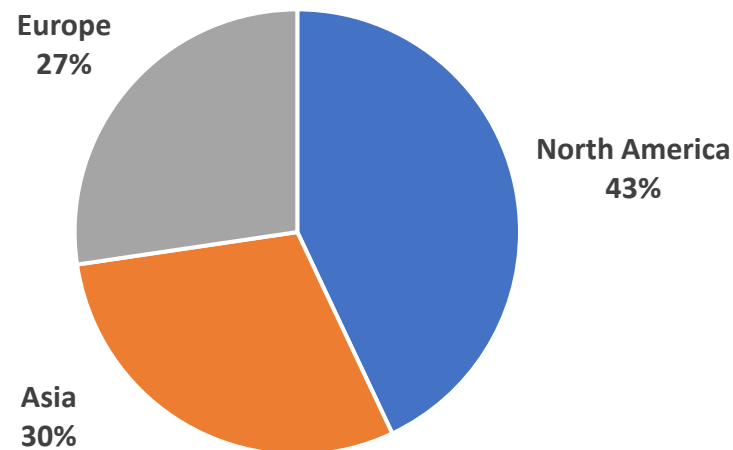
The total sample comprises **5,056 companies** located worldwide. Most of these companies are in North America, with 1,509 based in the United States. China follows with 785 companies, and Germany, the leading European country, accounts for 213 companies.

Italy ranks **15th** in this distribution, with 85 companies.

Global Funding Distribution



Data expressed in \$M



The total funding secured amounts to **\$67 billion**. This data encompasses all available funding rounds for each company from its inception. The period of the data extends from January 1995 to June 2024.

U.S. companies stand out as the leaders, securing over \$27 billion, followed by Chinese companies with nearly \$14 billion. German companies, the top European recipients, have secured \$7.3 billion. **Italian companies** rank 15th with **\$0.4 billion**.

Funding is mainly distributed across three continents: North America, Asia, and Europe, with North America in the lead.

Global Sector Funding



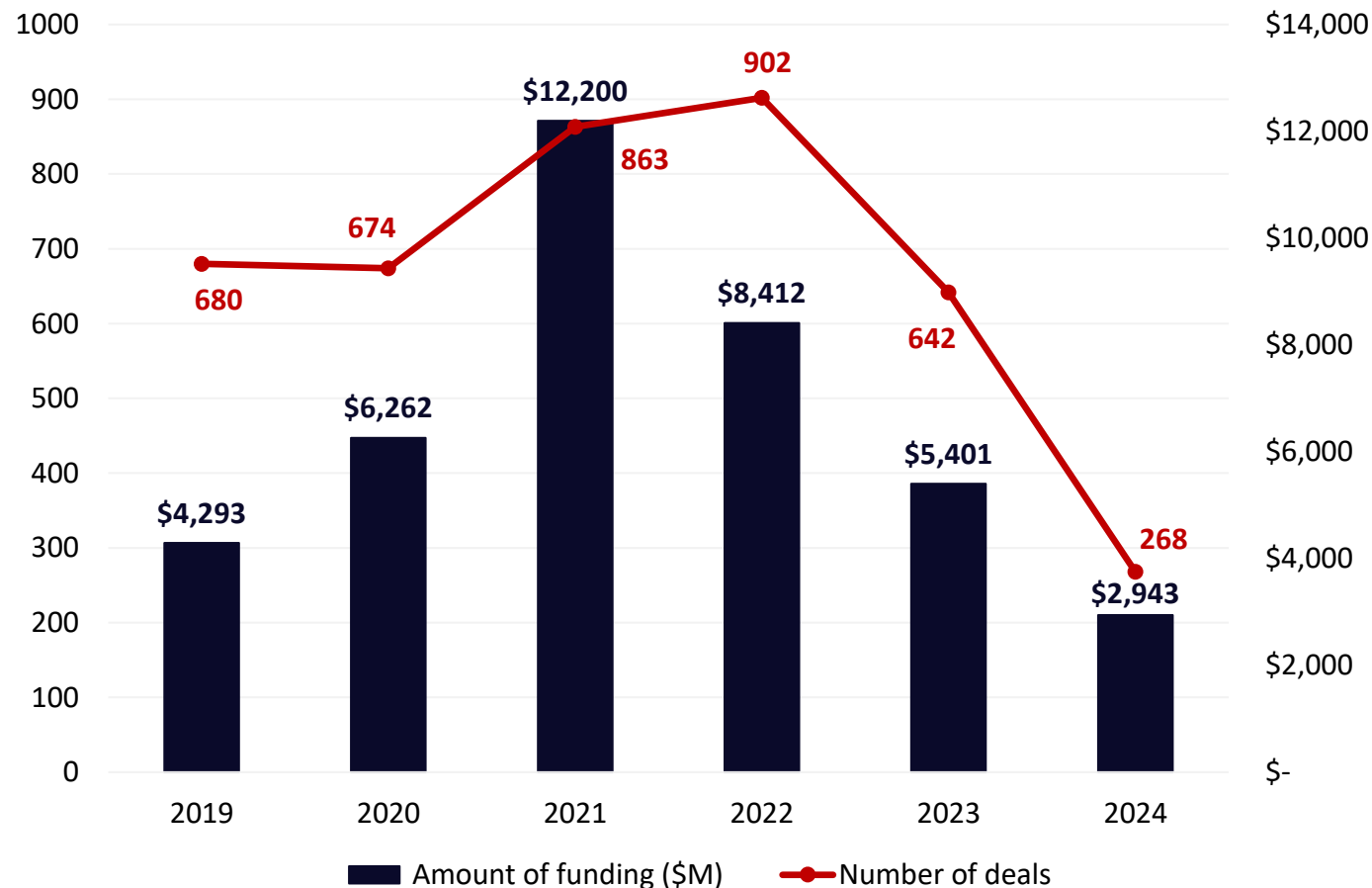
Data expressed in \$M

Sector	Total Funding (\$M)
Industrials	\$ 46,744.56
Healthcare	\$ 6,594.22
Internet	\$ 4,869.04
Software (non-internet/mobile)	\$ 2,993.62
Consumer Products & Services	\$ 2,682.99
Automotive & Transportation	\$ 838.76
Mobile & Telecommunications	\$ 678.45
Electronics	\$ 662.10
Agriculture	\$ 354.97
Business Products & Services	\$ 312.64
Leisure	\$ 132.63
Risk & Security	\$ 108.07
Food & Beverages	\$ 74.66
Computer Hardware & Services	\$ 25.55
Environmental Services & Equipment	\$ 6.43
Energy & Utilities	\$ 6.07

The sector **industrials** (i.e., Machinery & Equipment, Aerospace & Defense, Manufacturing, Basic Materials, and Construction), emerged as the top recipient with over \$43 billion in investments, also leading in company count with 4,298. **Healthcare**, represented by 162 companies, secured a notable \$6.5 billion, while the **Internet** sector, comprising 140 companies, gathered \$4.8 billion in funding.

Equity Funding Activity

- After three years of consecutive growth, peaking at \$12 billion in 2021, the equity funding activity began to decline.
- Despite reaching 902 deals in 2022, funding dropped to \$8.4 billion.
- In 2023, the sample experienced a significant decline, securing \$5.4 billion across 642 deals. This marked a 36% decrease in investments compared to the previous year.
- Deal activity also slowed by 29% from 2022, with 642 deals recorded.
- Funding totals continued their downward trend for two consecutive years, plummeting in 2023 by 56% from the peak observed in 2021.

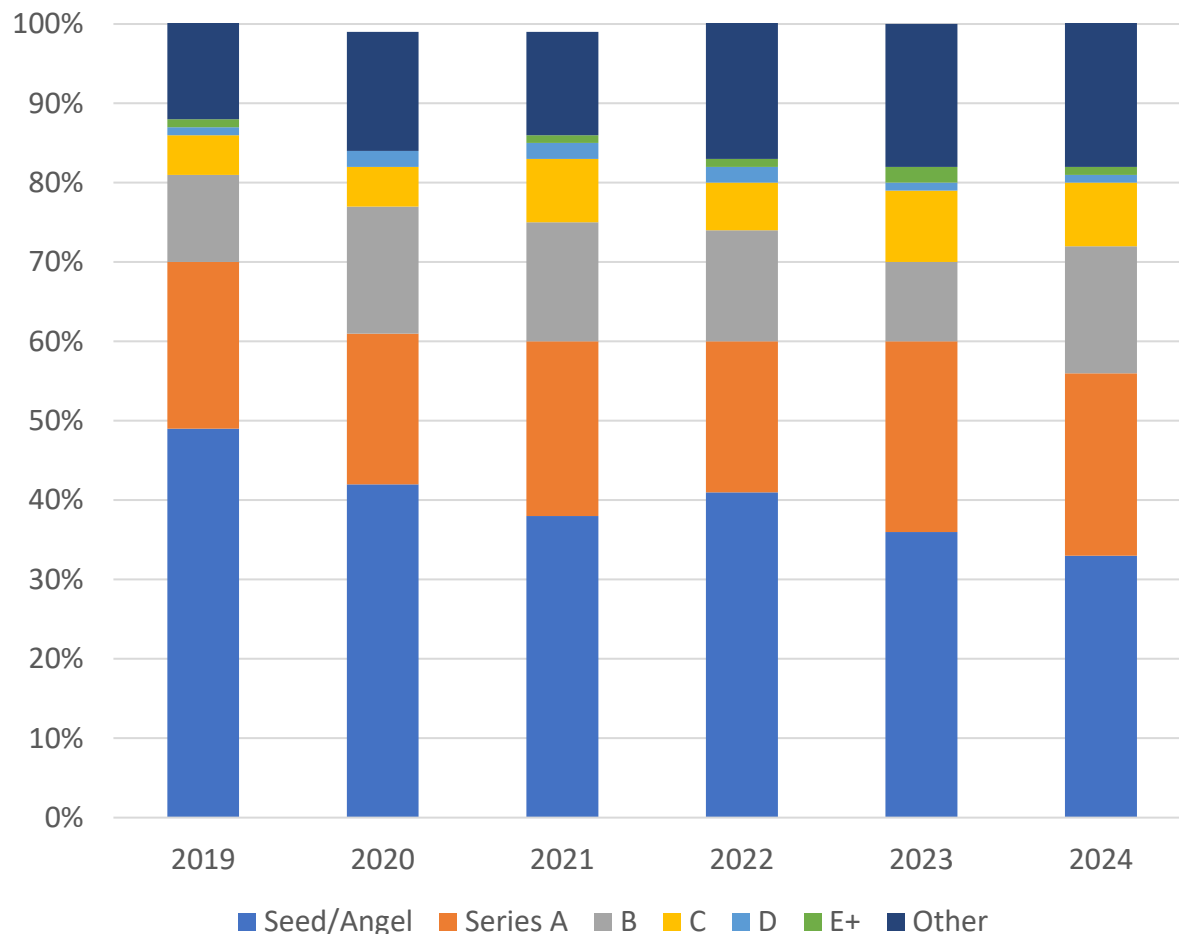


Tech investment downturn since 2021

Starting from **2021**, **investments in tech companies**, particularly in the **robotics sector**, have significantly declined due to several key factors:

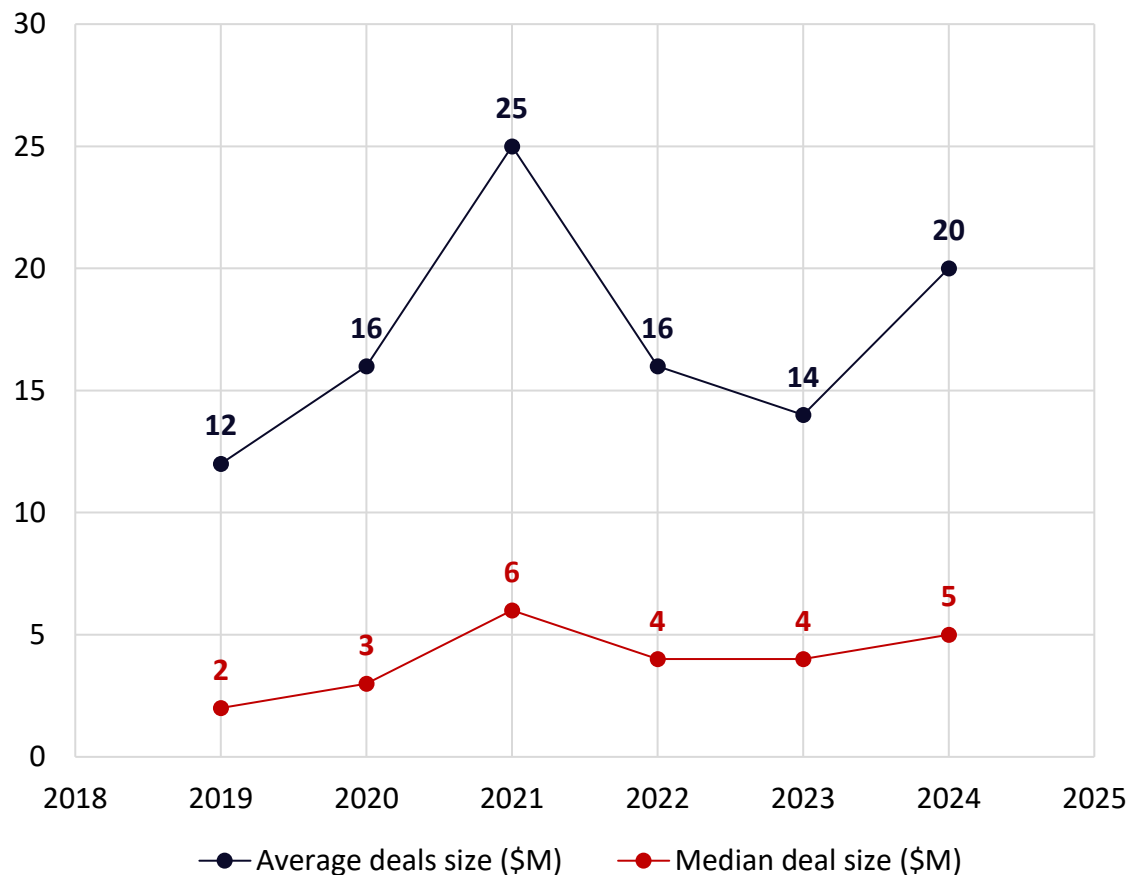
- The **pandemic** caused an **economic contraction in many countries**, decreasing demand for various products and services. Consequently, companies adopted a conservative stance, **cutting or postponing investments in technology** to preserve liquidity and reduce financial risks.
- To combat inflation, central banks, including the Federal Reserve in the United States, **increased interest rates**, making capital more expensive. This rise in financing costs made **high-risk, long-term investments**, such as those in robotics, **less attractive** to investors.
- **Inflation drove up the costs of raw materials, energy, and transportation**, eroding profit margins. Faced with rising costs, tech companies reduced investments in innovation to focus on essential operations.
- **Geopolitical tensions in Europe and the Middle East** have introduced uncertainties into the global technology market. Sanctions and trade restrictions have further complicated access to critical markets and technologies, significantly diminishing the appeal of tech companies to investors.

Deal Share by Stage



- Overall, the investment landscape shows a clear shift towards more diversified and later-stage funding as the industry matures.
- Seed/Angel** funding **declined** from 49% in 2019 to 33% by 2024, indicating a **maturing market**.
- Series A** funding increased from 21% in 2019 to 24% in 2023, before dipping slightly to **23% in 2024**, reflecting growing investor confidence in scaling startups.
- Series B** funding fluctuated but generally **trended upwards**, reaching 16% in 2024 after a drop to 10% in 2023. **Series C** funding peaked at 9% in 2023, showing continued support for companies advancing **beyond the initial stages**.
- Later-stage funding** (Series D and E+) **remained low**, indicating that most investments are still concentrated in earlier rounds.

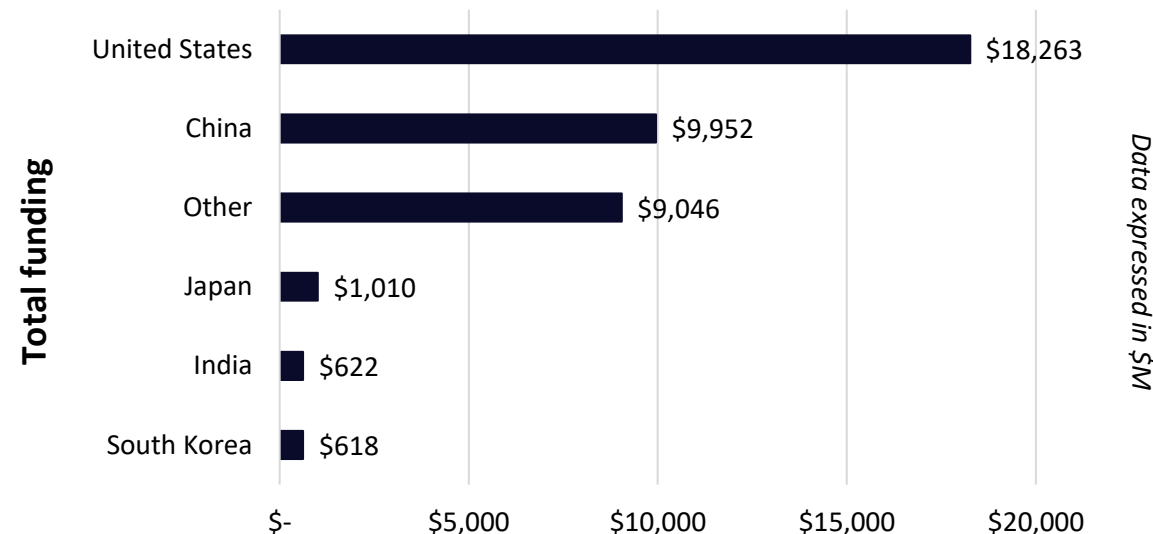
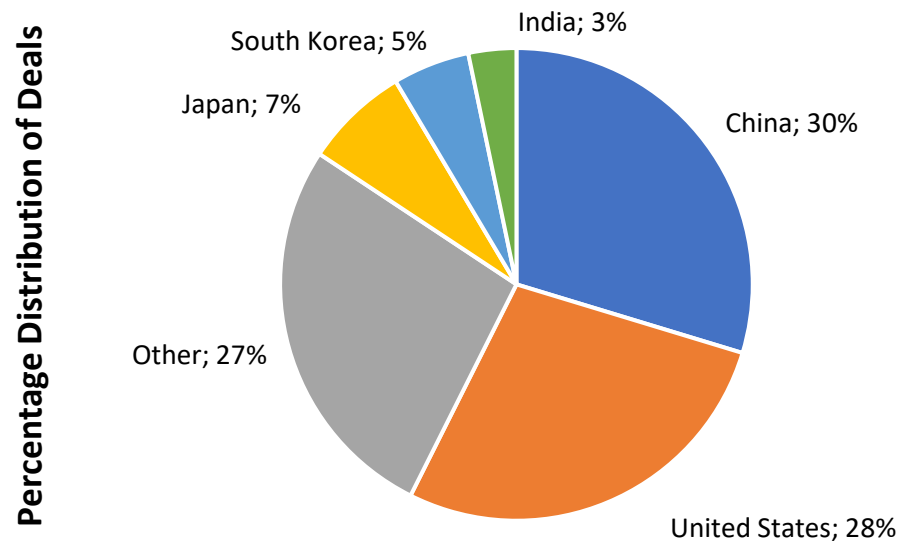
Deal Size



- The sample has seen a sustained decline in average deal size, while median deal size has remained unchanged.
- Average deal size decreased in 2022, dropping from \$25 million in 2021.
- Average deal size has now rebounded to \$20 million, interrupting two consecutive years of decline.
- Median deal size has remained steady in the last five years at \$4.36 million, despite decreasing in both 2022 and 2023, with an increase observed in 2024.

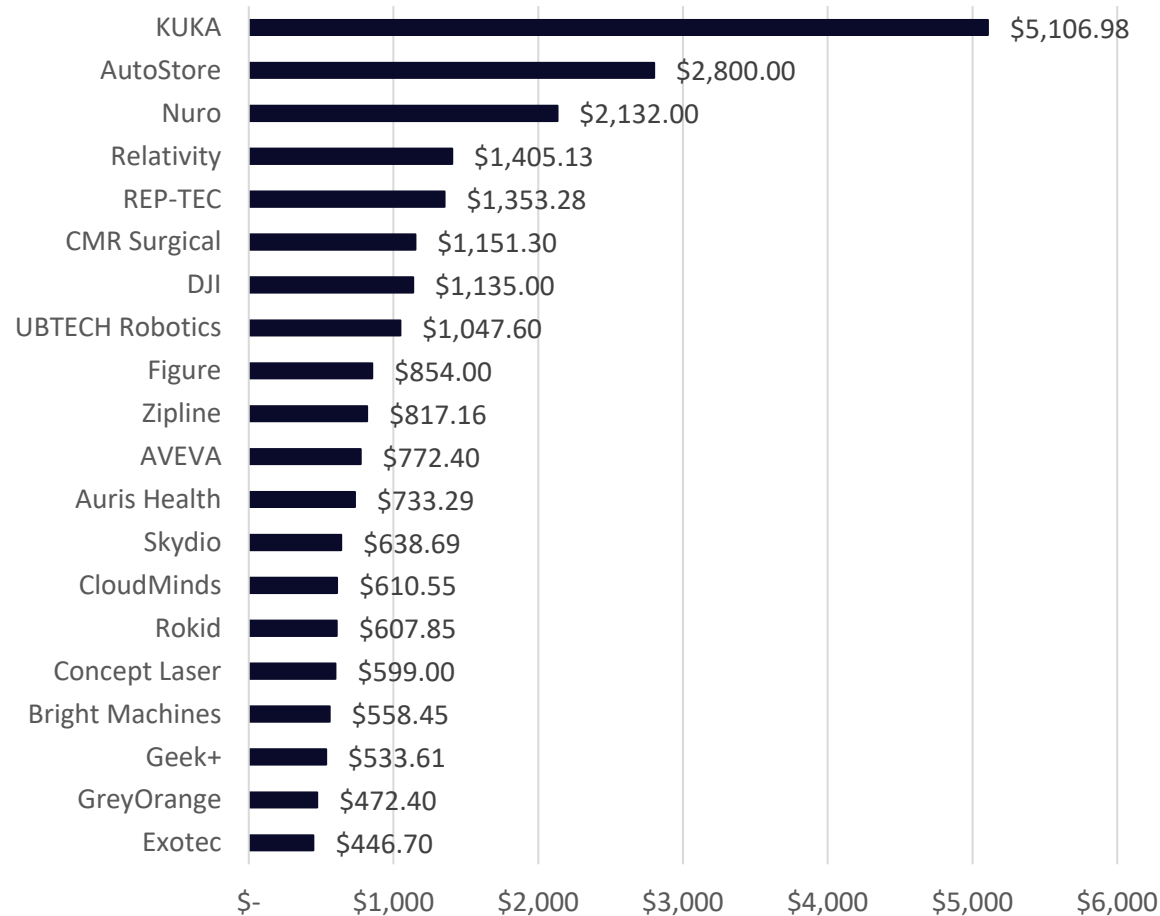
While both measures provide insights into deal sizes, the “average deal size” reflects the arithmetic mean of all deals, whereas the “median deal size” represents the middle value when deals are sorted by size. This gives a more accurate picture of a typical deal, as it is not skewed by outliers.

Deals by geography – last 5 years



Over the past five years (Jan 2019 – Jun 2024), robotics companies have secured **\$39.5 billion**, representing 69% of the total funding in our sample. This highlights a particularly **intense period of funding activity in recent years**. Chinese companies have been involved in the highest number of deals, with 1,175 deals amounting to nearly \$10 billion. U.S. companies have collected \$18 billion across 1,126 deals. Following these, three Asian countries stand out for significant funding activity by their respective companies: Japan secured \$1 billion across 292 deals, India garnered \$622 million from 133 deals, and South Korea amassed \$618 million through 212 deals.

Top 20 funded companies



Data expressed in \$M

Companies	URL	Founded Year	Country
KUKA	kuka.com	1898	Germany
AutoStore	autostoresystem.com	1996	Norway
Nuro	nuro.ai	2016	United States
Relativity	relativityspace.com	2015	United States
REP-TEC	rp-tec.co.uk	2020	Ireland
CMR Surgical	cmrsurgical.com	2014	United Kingdom
DJI	dji.com	2006	China
UBTECH Robotics	ubtrobot.com	2012	China
Figure	figure.ai	2022	United States
Zipline	flyzipline.com	2014	United States
AVEVA	aveva.com	1967	United Kingdom
Auris Health	aurishealth.com	2007	United States
Skydio	skydio.com	2014	United States
CloudMinds	cloudminds.com	2015	China
Rokid	global.rokid.com	2014	United States
Concept Laser	concept-laser.de	2000	Germany
Bright Machines	brightmachines.com	2018	United States
Geek+	geekplus.com	2015	China
GreyOrange	greyorange.com	2012	United States
Exotec	exotec.com	2015	France

Top 20 funded companies – established in the last decade



Companies	URL	Founded Year	Country
Nuro	nuro.ai	2016	United States
Relativity	relativityspace.com	2015	United States
REP-TEC	rp-tec.co.uk	2020	Ireland
CMR Surgical	cmrsurgical.com	2014	United Kingdom
Figure	figure.ai	2022	United States
Zipline	flyzipline.com	2014	United States
Skydio	skydio.com	2014	United States
CloudMinds	cloudminds.com	2015	China
Rokid	global.rokid.com	2014	United States
Bright Machines	brightmachines.com	2018	United States
Geek+	geekplus.com	2015	China
Exotec	exotec.com	2015	France
MicroPort Medical Robot	medbotsurgical.com	2014	China
Locus Robotics	locusrobotics.com	2014	United States
MegaRobo	megarobo.com	2016	China
Chang Guang Satellite Technology	jl1.cn	2014	China
Agile Robots	agile-robots.com	2018	Germany
Fabric	getfabric.com	2015	Israel
SmartMore	smartmore.com	2019	Hong Kong
Starship	starship.xyz	2014	United States

Top investors worldwide

Name	Type	Country	Last 3 Months	Last Year	Last 2 Years	All Time
HAX	Incubator/Accelerator	China	3	4	18	131
SOSV	Venture Capital	United States	0	4	16	125
Plug and Play Accelerator	Incubator/Accelerator	United States	0	0	0	104
National Science Foundation	Government	United States	0	5	14	99
U.S. Department of Defense	Government	United States	0	0	2	98
Y Combinator	Incubator/Accelerator	United States	2	6	11	87
TIPS Program	Incubator/Accelerator	South Korea	0	5	11	59
Drone Fund	Venture Capital	Japan	0	2	7	51
HongShan	Venture Capital	China	0	1	2	47

This table provides a detailed overview of key investors in the robotics sector, detailing the investments received by companies within the sample. Examination of the figures reveals the robust activity of HAX, which has accumulated 131 investments over the years, firmly establishing itself as one of the field's most active **incubators/accelerators**. Similarly, Plug and Play Accelerator and Y Combinator have solidified their positions with 104 and 87 total investments, respectively, showcasing a steadfast commitment to supporting robotic startups, particularly within the USA. Additionally, the South Korean company TIPS Program has contributed 59 investments, further enriching the landscape of incubators and accelerators.

Internationally, **venture capitals** such as American SOSV and Japanese Drone Fund have made 125 and 51 investments, respectively, highlighting the global interest in robotics. Meanwhile, HongShan from China has contributed 47 investments, underscoring its active participation in advancing robotics technologies by venture capitalists.

Investments from the U.S. National Science Foundation and Department of Defense demonstrate a significant and consistent support with 99 and 98 investments respectively over time. This substantial **governmental interest** in fostering technological innovation within the sector underscores the importance and impact of the work being done in robotics, aligning with broader strategic objectives in technology and defence innovation.

Top acquirers worldwide

Name	Business domain	Country	Last 3 Months	Last Year	Last 2 Years	All Time
Guardforce AI	Security and integrated services	Thailand	0	0	0	8
Google	Technology and internet services	United States	0	0	0	7
ABB	Industrial automation and robotics	Switzerland	0	1	1	6
Lincoln Electric	Welding and cutting	United States	1	1	2	6
Delta Drone	Drone solutions for security and industrial applications	France	0	1	2	5
Teledyne FLIR	Thermal sensors and surveillance	United States	0	0	0	4
SoftBank	Diversified technology investments and telecommunications	Japan	0	1	2	4
Teradyne	Electronic test and measurement, collaborative robotics	United States	0	0	0	4
Hexagon	Sensing and software for industrial automation	Sweden	0	1	2	4
AeroVironment	Unmanned aerial systems (drones)	United States	0	1	2	4

This table presents the key acquirers among the sampled companies and details their acquisition activities over time. The increasing trend of acquiring robotics firms underscores the strategic significance of these technologies across **diverse industrial and technological sectors**. Data reveals that leading companies in a wide range of sectors, including technology, industrial automation, security, aerospace, and sensor technology, are actively investing in robotics startups and firms. This trend reflects a broader shift towards innovation and automated solutions aimed at improving efficiency, precision, and cost-effectiveness.

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