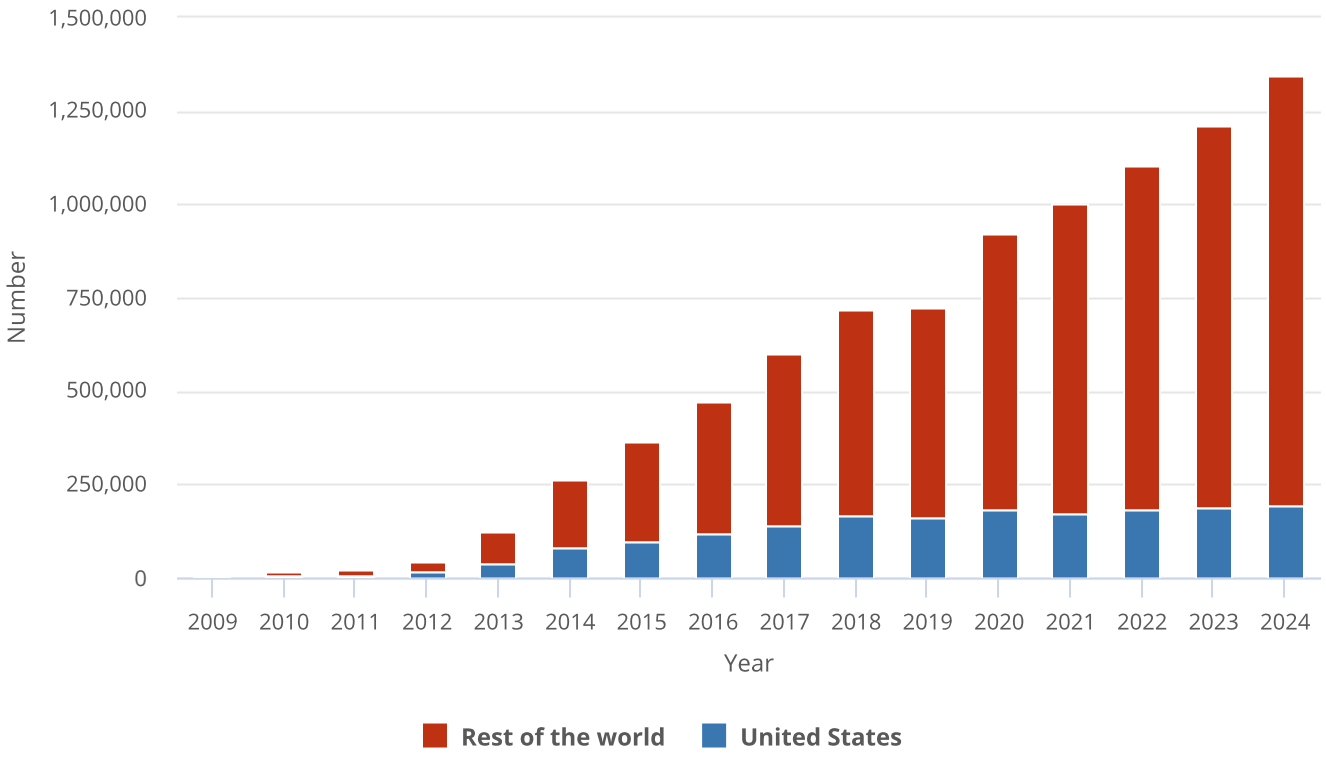
Global Contributions and Collaborations in Open-Source Software

For new repositories created in 2010 with known locations, U.S. developers accounted for 38% of GitHub contributions (Figure TRN-A); by 2024, U.S. contributors with known locations accounted for 14.4% (Figure TRN-B). India, Brazil, China, and Germany join the United States in having some of the highest numbers of contributions to GitHub repositories (Table STRN-33). Seven countries accounted for over half of the known new GitHub contributions in 2024 (Figure TRN-B). The United States accounted for the largest share of known contributions to new GitHub repositories in 2024 (14.4%), followed by India (10.1%), Brazil (8.8%), and Germany (5.6%).

Figure TRN-A. New GitHub repositories contributed by the United States and the rest of the world: 2009–24

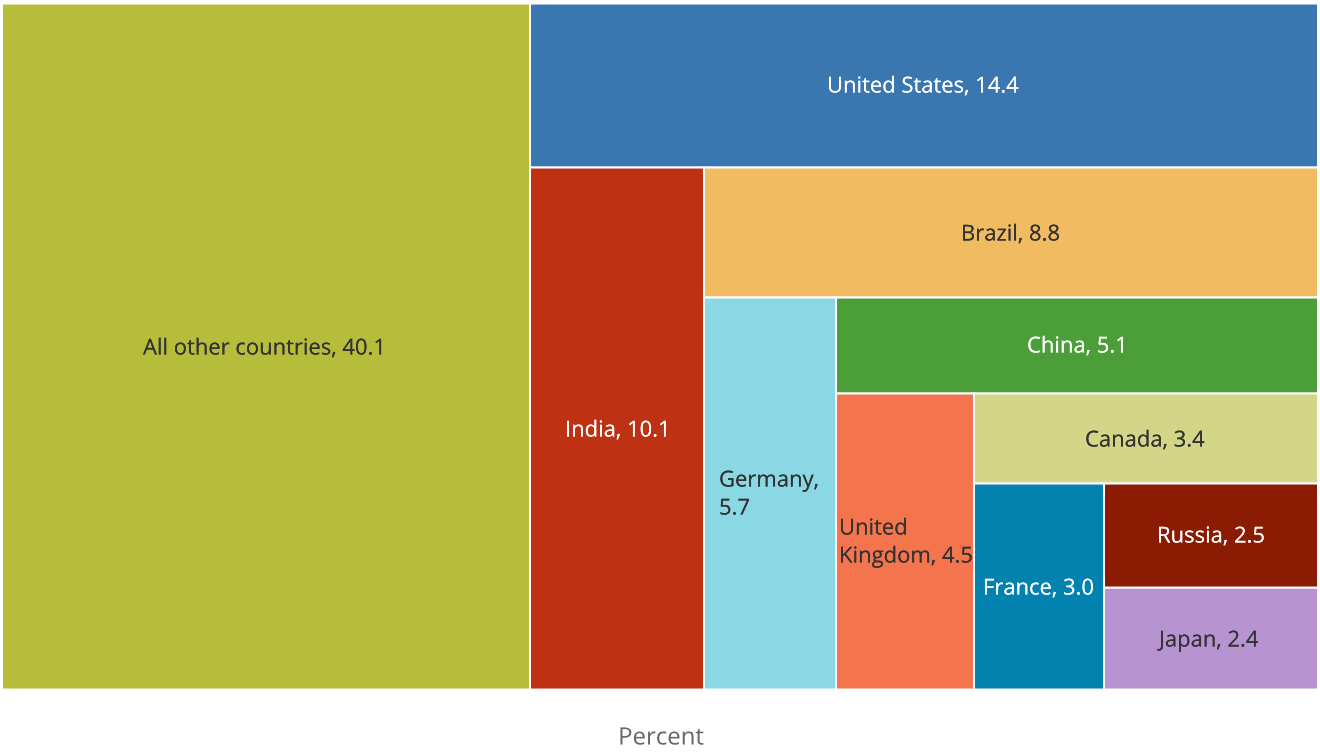


Note(s):
Repositories are fractionally counted assigning equal credit to each developer within a repository and then distributed across associated countries. Repositories are attributed to the year of the earliest commit, and only developers who contributed in that earliest year receive credit, ensuring each repository is only counted once in time, even if contributions span multiple years. Repositories without location information are not shown.

Source(s):
Westat and National Center for Science and Engineering Statistics, tabulations of GitHub data, December 2025.

Science and Engineering Indicators

Figure TRN-B. Share of new GitHub repositories, by region, country, or economy of contributor: 2024



Note(s):
This figure is based on the contributions to new GitHub repositories contributed to by each country per year using the fractional-counting method. Each new repository's credit is divided equally across its contributors, and each contributor's share is further divided across their associated countries. This ensures that the total sum of all countries' contributions matches the total number of unique repositories. See Table STRN-33.

Source(s):
Westat and National Center for Science and Engineering Statistics, tabulations of GitHub data, December 2025.

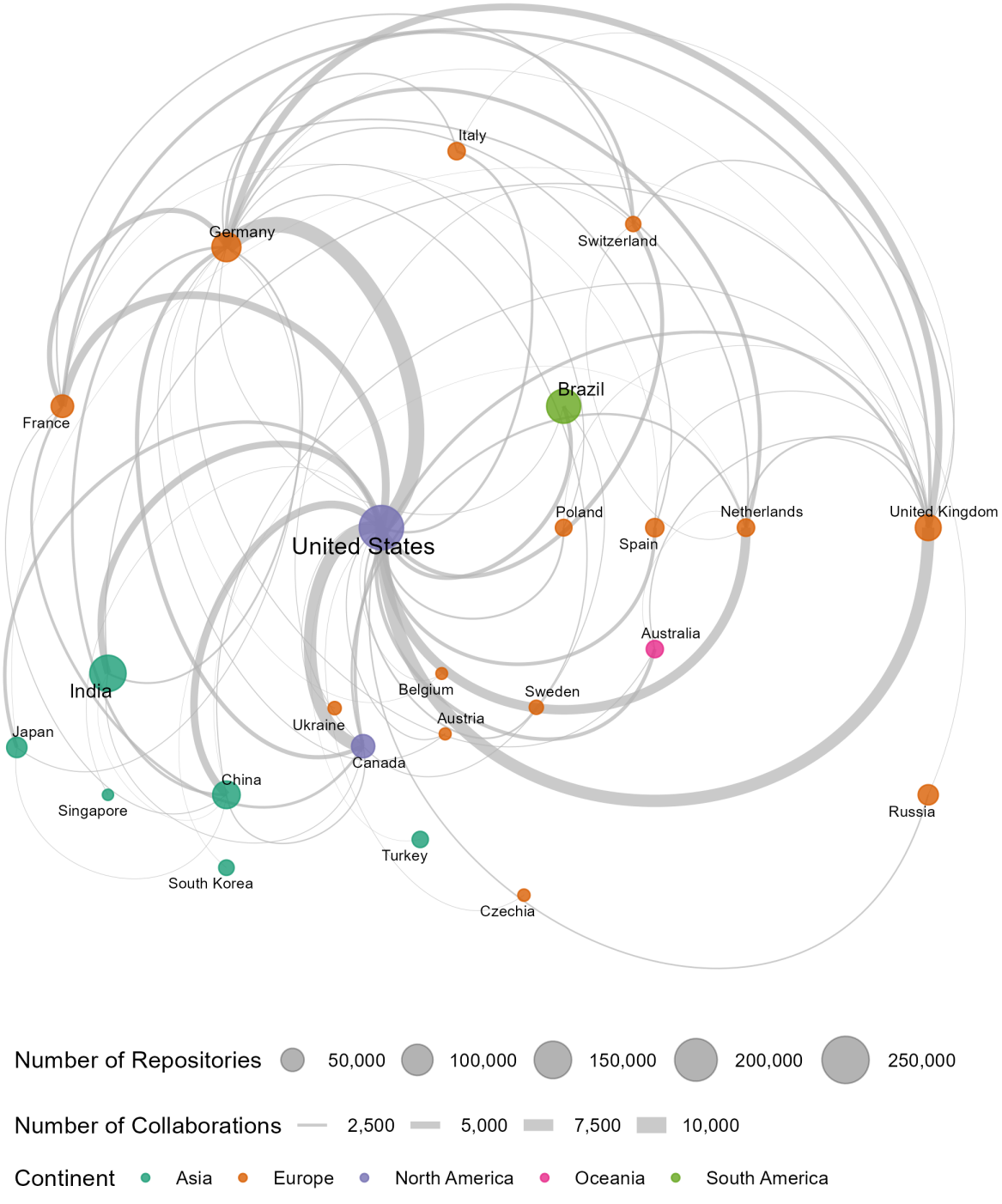
Science and Engineering Indicators

Seven of the top 10 private-sector companies that contributed to GitHub repositories between 2009 and 2024 are headquartered in the United States, with GitHub itself and Snyk, a cybersecurity company headquartered in Boston, accounting for the highest contributions. Chinese e-commerce company NetEase and the Russian Internet search and e-mail providers Yandex and VK round out the top 10. Of the top 10 global university contributors to GitHub during the same period, half are located in the United States. The Massachusetts Institute of Technology, Stanford University, Carnegie Mellon University, and the University of Washington Seattle Campus top the academic list; the University of California, Berkeley, is seventh. Foreign universities among the top contributors are Ecole pour l'Informatique et les Nouvelles Technologies (France), University of Toronto (Canada), Tsinghua University (China), Technische Universität München (Germany), and ETH Zurich (Switzerland) (Table STRN-34).

Developers throughout the world collaborate through the creation of open-source software (OSS). GitHub provides tools to collect user attribute and activity data that can be analyzed to assess OSS collaborations between countries. Collaboration is defined as pairs of individuals who contribute code to a common repository. Similar to the way in which research publication records show patterns of collaboration in the *Indicators 2026* report "Discovery: R&D Activity and Research Publications" (NSB 2025), OSS collaboration networks show international relationships in knowledge creation and transfer.

OSS collaborations occur across regions, countries, or economies, and network analysis can provide visualizations of these collaborative relationships, shown when a repository has contributions by developers from both countries. The most frequent collaboration pairing in 2024 was between Germany and the United States, appearing in almost 9,800 repositories, followed by Canada and the United States (7,900) (Figure TRN-C). Among collaborations not involving developers from the United States, the highest numbers of collaborations in 2024 were between Germany and the United Kingdom (4,800) and between Germany and France (3,800). For more details on collaboration pairs and contributions by country, see Table STRN-35. For the number of repositories attributed to each location, see Table STRN-36.

Figure TRN-C. Open-source software collaboration networks in GitHub, by region, country, or economy: 2024



Note(s):
This figure is based on the top country-to-country open-source software collaborations on GitHub in 2024, measured by the number of co-developed repositories that have more than 1,000 collaborations. A repository is counted as co-developed between two countries if it includes developers from both countries. All eligible country pairs are credited using a whole-counting method, meaning each country pair receives full credit for each shared repository. See Table STRN-35.

Source(s):
Westat and National Center for Science and Engineering Statistics, tabulations of GitHub data, December 2025.

Science and Engineering Indicators