

## InfoViz Final Project: How did the Generative AI landscape evolve?

### How did the Generative AI landscape evolve?

**By Group 1:** Anshita Arya, Melissa Licari, Richa Verma, Molly Zhang

#### Project goals

Our capstone project explores the generative AI space as our capstone heavily utilizes the GPT-3 model in converting user questions into SQL queries to understand business insights.

Since the generative AI space is rapidly evolving and changing the way we are doing work in our everyday lives, we wanted to create a story from how this technology came to be and educate people on the state of the industry. We had these two primary goals for the project:

- To explore the progression of the businesses contributing to generative AI over time
- Interface to show visualizations of the big players in the generative AI industry and the breakdown by sectors

The tasks we wanted the visualization to show are

- Which country and which year did you see most AI startups come?
- Which generative AI companies have you heard of, can you identify it on the timeline, are you able to infer corresponding information, such as launch date
- Which segment and technology are the top ones?

These tasks were chosen since we felt they gave a good overview of understanding of the industry, what companies were leading the charge, and what technologies were supporting the industry.

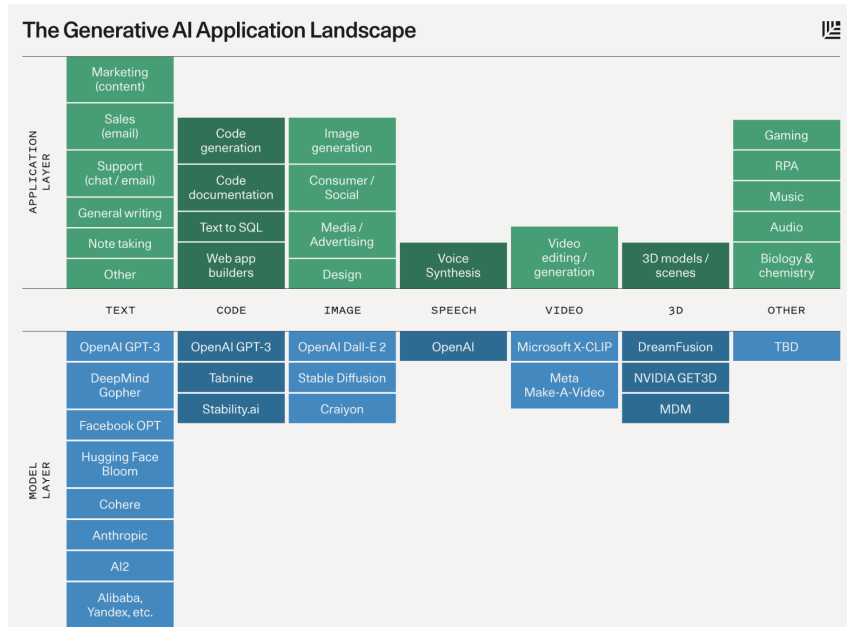
Link to website: <https://dashqueries.github.io/>

Link to the GitHub project: <https://github.com/DashQueries/dashqueries.github.io>

#### Related Works

Sequoia Capital is a venture capital firm looking to invest in the newest tech startups, which includes the generative AI space. It provided an in depth guide to what applications and industries generative AI can be applied to, as well as some of the technologies used to implement those applications. Our project expands upon these technologies with a timeline for major milestones and breaks down the industry by the number of startups in the space.

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Antler is also mapping the current generative AI landscape. We took this startup data and more, since the industry is evolving so quickly, to aggregate statistics for the whole landscape.



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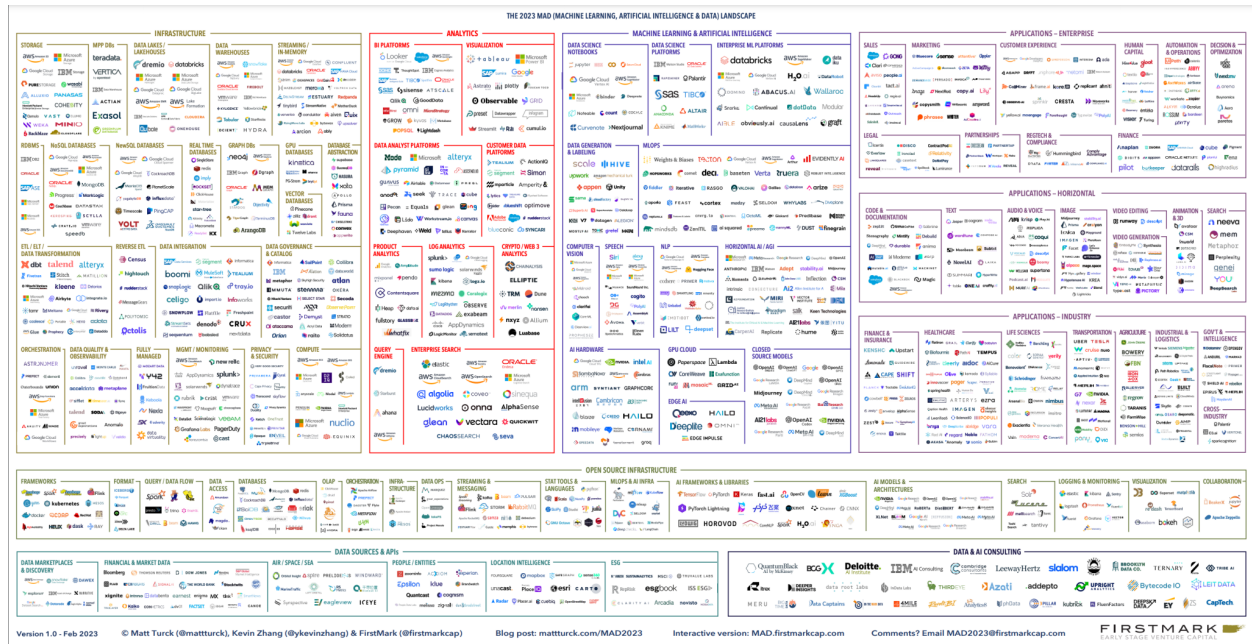
[Base10](#) is another VC firm aggregating data on the generative AI industry landscape. It does a good job of breaking down companies by sector as well as having specific financial funding data.

### Top Investors

Investor	Companies Backed	Rounds Participated In	Rounds Led	Companies
 TIGERGLOBAL	13	17	11.0	OpenAI, Cohere, Ad...
 andressen horowitz	8	27	12.0	OpenAI, Anyscale, D...
 INSIGHT VENTURE PARTNERS	8	10	9.0	Jasper, Tonic.ai, Hou...
 SEQUOIA	8	14	7.0	OpenAI, Hugging Fa...
500 Global	7	7	0.0	WOMBO, Lang.ai, U...
 COATUE	6	8	4.0	Jasper, Lightning AI,...
Bloomberg Beta	6	15	0.0	Tonic.ai, Weights & B...
 Index Ventures	5	7	4.0	Cohere, Lightning AI...
Section 32	5	10	1.0	Cohere, Dialpad, Gr...
Bossanova Investimentos	5	7	0.0	Jasper, Deepgram, ...
GTMFund	5	5	0.0	Lang.ai, SeMI Techn...
Alumni Ventures	5	5	0.0	Moises, Lang.ai, Ago...
Soma Capital	5	5	0.0	Writesonic, Fathom ...
New Enterprise Associates	4	13	8.0	Anyscale, Forethoug...
Sierra Ventures	4	11	8.0	Podcastle, Krisp, Qui...

We also drew inspiration from [Venture Beat](#). The comprehensive and well-organized presentation of the AI industry in the 2023 MAD Landscape inspired us to provide a similar overview of the Generative AI industry, with a focus on categorization and clarity.

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CB Insights inspired our design for similar reasons as Venture Beat. Their design of the Generative AI landscape inspired us to create a categorized view of the most prominent startups in the space, leading us to our scatterplot design. Our initial plan was to create a tree map based on this design to demonstrate the prominence of different segments, however, due to the difference in our datasets (CB Insights only included startups while we included major companies), our categorization resulted in many more, smaller categories. Therefore, we decided that a color coded scatterplot could be a good way to demonstrate the industries, as a tree map would have resulted in categories too small to gain any insight.

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## The Generative AI Application Landscape v2

A work in progress



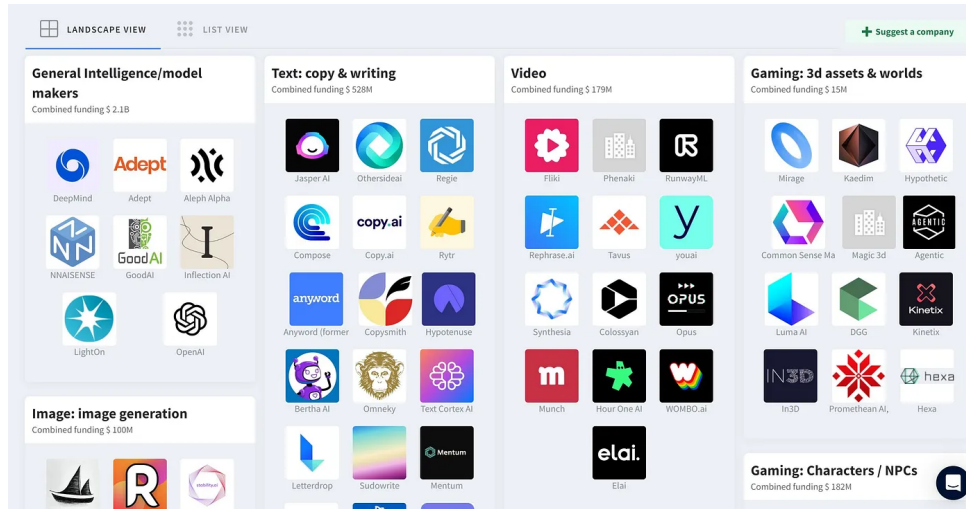
Tech Target provided the initial inspiration for our timeline. This image was how we envisioned our initial timeline, however, as our plan for our website developed and our goals changed, we felt that this timeline was too cluttered for the information we wanted to convey. A timeline this detailed was too wide for the scope of our project as we decided to narrow our scope from an educational perspective to just provide an overview of the current GAI market. Regardless, this timeline provided initial inspiration for our final, much simpler timeline.

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[DealRoom's Landscape](#) helps to visualize how much each sub-section of Generative AI landscape got the funding. This also became the source for our analysis data.

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We used the chart below from [JP Morgan](#) to further influence our plan to display the different industries of Generative AI. This chart influenced our scatterplot as this chart shows the different industry segments projected across time. While this chart shows a projection of the effectiveness of Generative AI, we decided to show the funding of the different industries in the past up to 2022.

	Pre-2020	2020	2022	2023 ?	2025 ?	2030 ?
Text	Spam detection Translation Basic Q&A	Basic copywriting First drafts	Longer form Second drafts	Vertical fine-tuning gets good (scientific papers, etc.)	Final drafts better than the human average	Final drafts better than professional writers
Code	One-line auto-complete	Multi-line generation	Longer form Better accuracy	More languages More verticals	Text to product (draft)	Text to product (final), better than full-time developers
Images			Art Logos Photography	Mock-ups (product design, architecture, etc.)	Final drafts (product design, architecture, etc.)	Final drafts better than professional artists, designers, photographers
Video/ 3D/ Gaming			First attempts at 3D/video models	Basic/first draft videos and 3D files	Second drafts	AI Roblox Video games and movies are personalized dreams

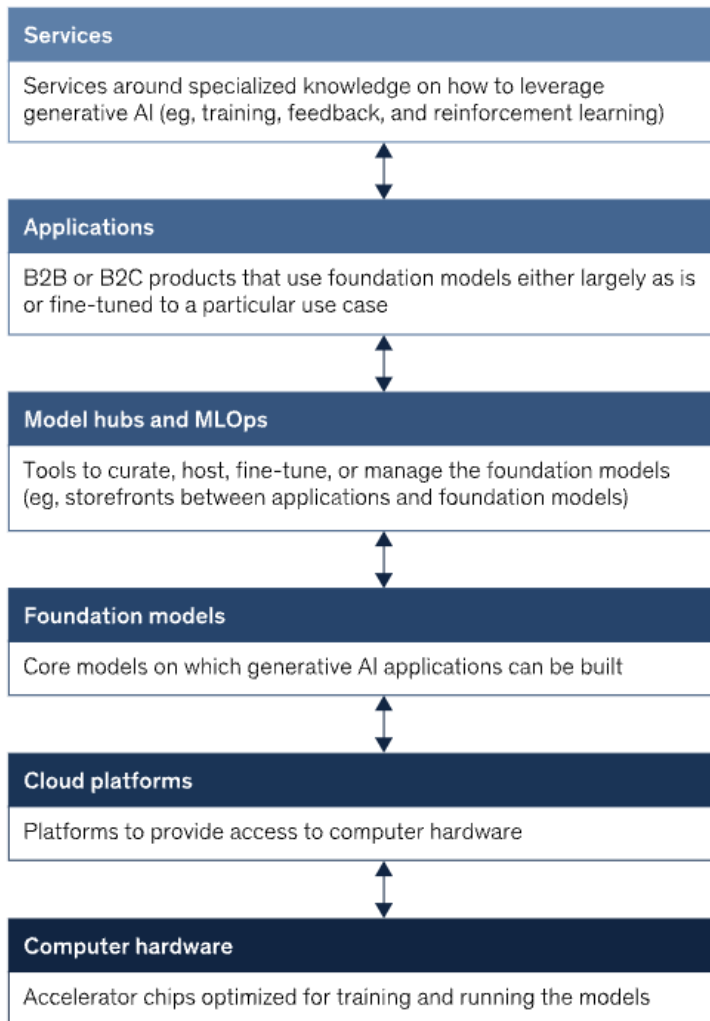
Large model availability: ● First attempts ● Almost there ● Ready for prime time

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This [McKinsey](#) graphic and the information presented inspired us to make a similar breakdown of where growth is happening among the different sectors of Generative AI. Because we are working with past data rather than forecasting into the future, our bar chart of business sectors is broken down by the number of startups up to 2022. We also chose to include a bar graph of the number of startups by product type.

**There are opportunities across the generative AI value chain, but the most significant is building end-user applications.**

### Generative AI value chain



Opportunity size for new entrants in next 3–5 years, scale of 1–5



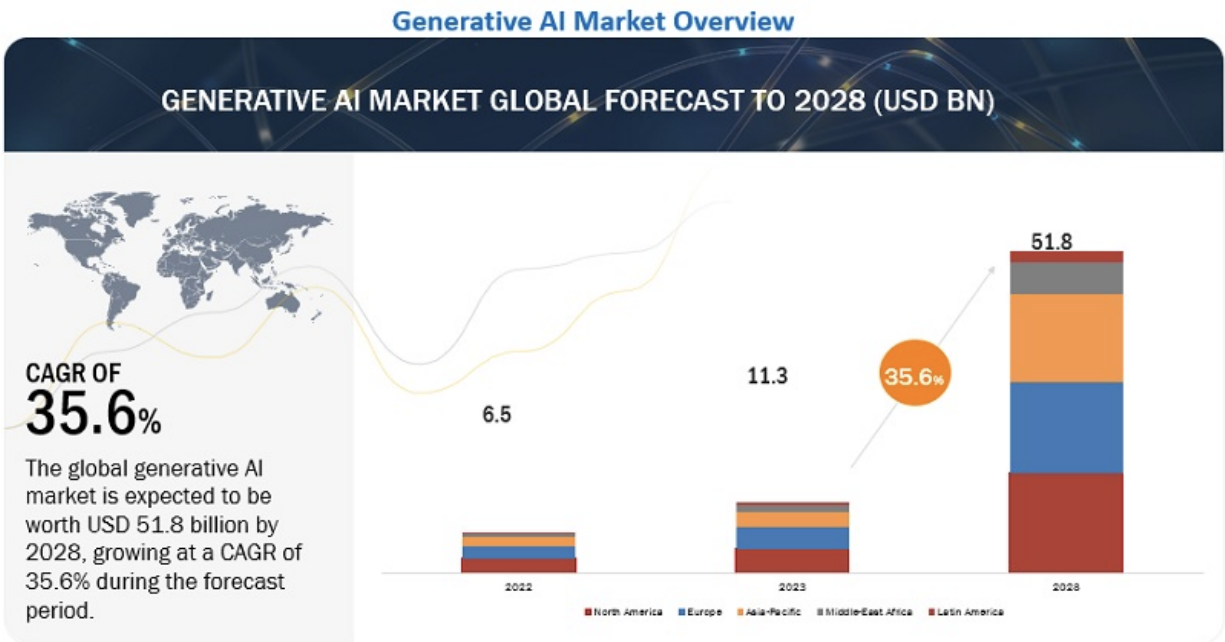
McKinsey & Company

[MarketsandMarkets](#) is another resource that contained a graphic that inspired us. While we are not forecasting, we thought it was useful to include some sort of map representation of where



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the Generative AI space is located. We decided to show the number of startups on a world map, where the size of the dot represents the amount of startups.

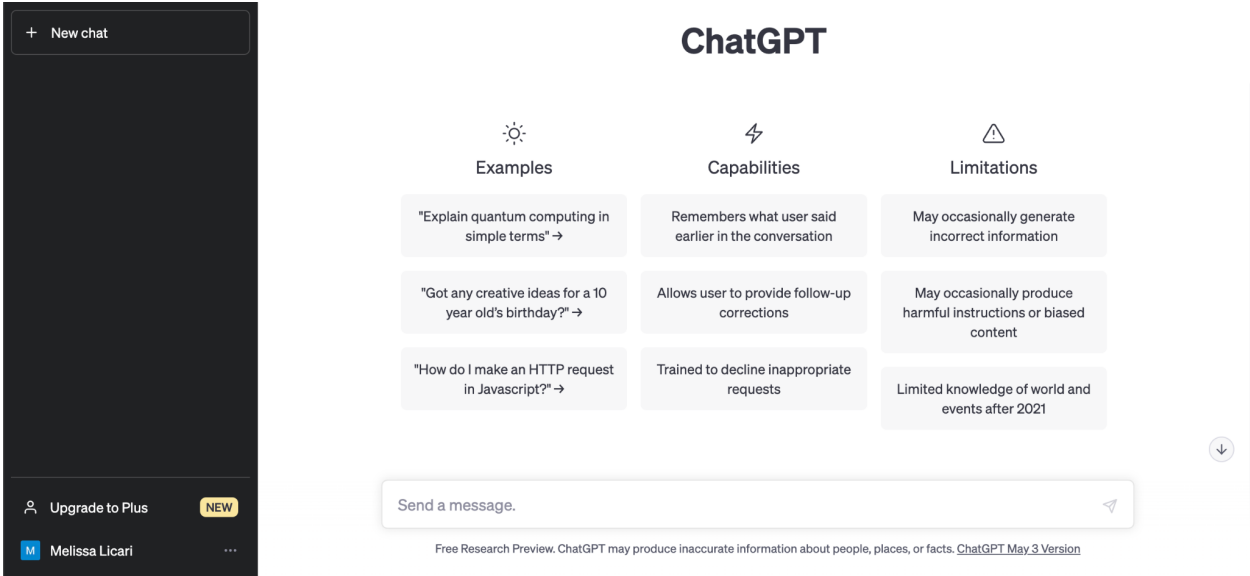


We used Infographic elearning to influence the general flow of our webpage. We enjoyed how this graphic takes the user through the information in a question-answer format. We replicated that in how we present our information in our final design.



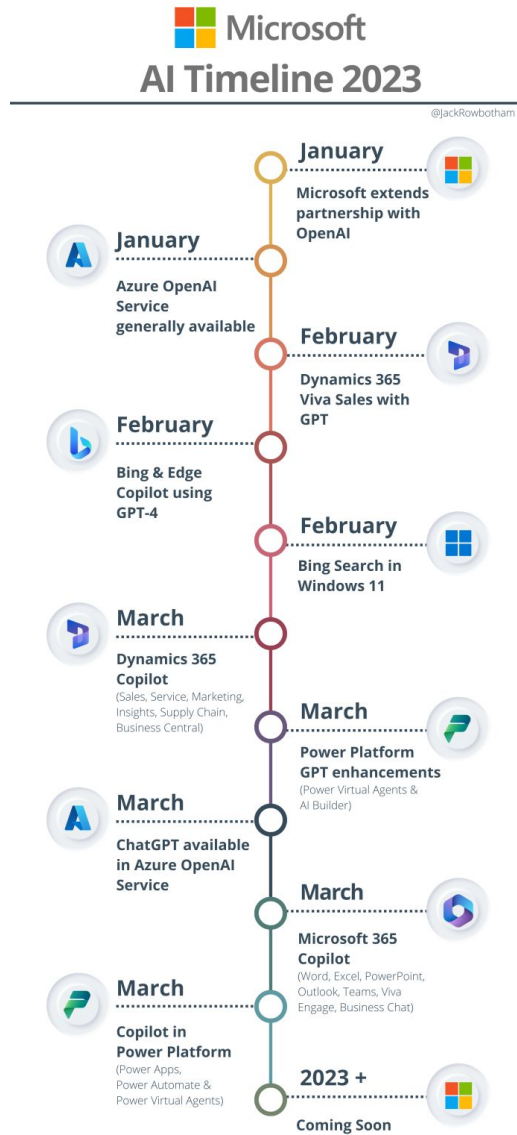
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Our final influence was [ChatGPT](#). This was the interface that inspired Richa's Figma design and what we ultimately ended up designing around for the final look of our website. We liked how this interface provided a clever way to present and explain information while also staying on the topic of Generative AI.



We used [LinkedIn timeline infographic](#) as design inspiration for our final timeline. We liked the clarity of this infographic compared to our other timeline inspiration and wanted to design something similar. Our inspiration can be seen in the design and layout of our final timeline.

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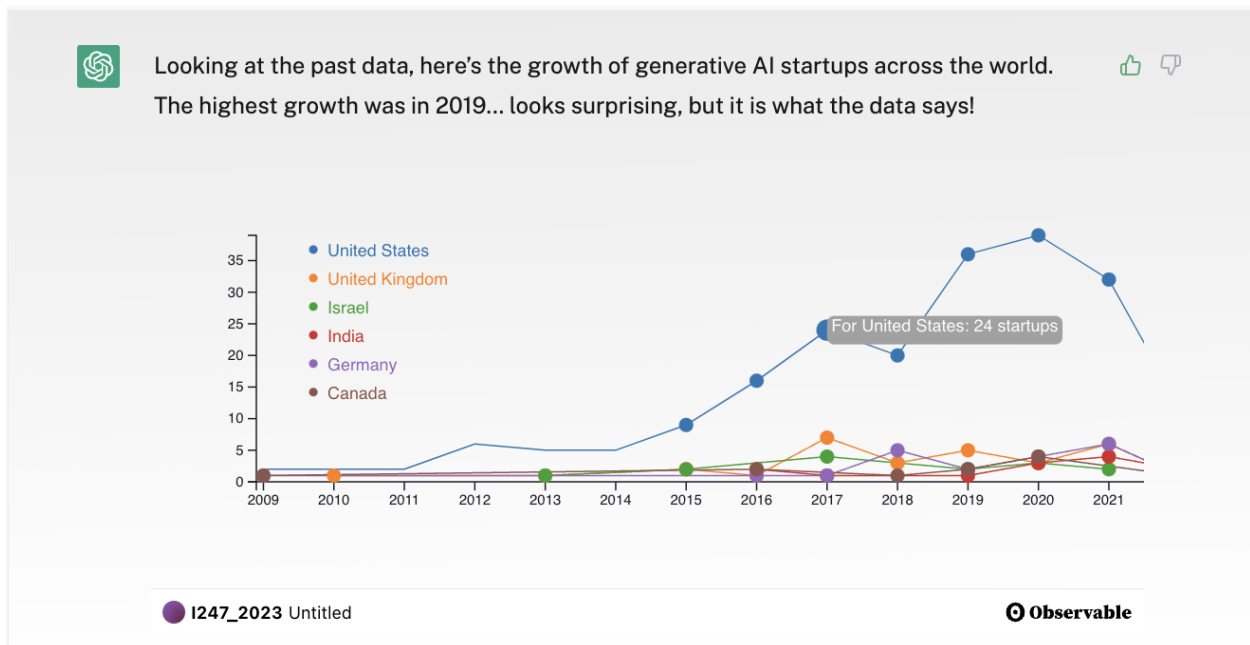
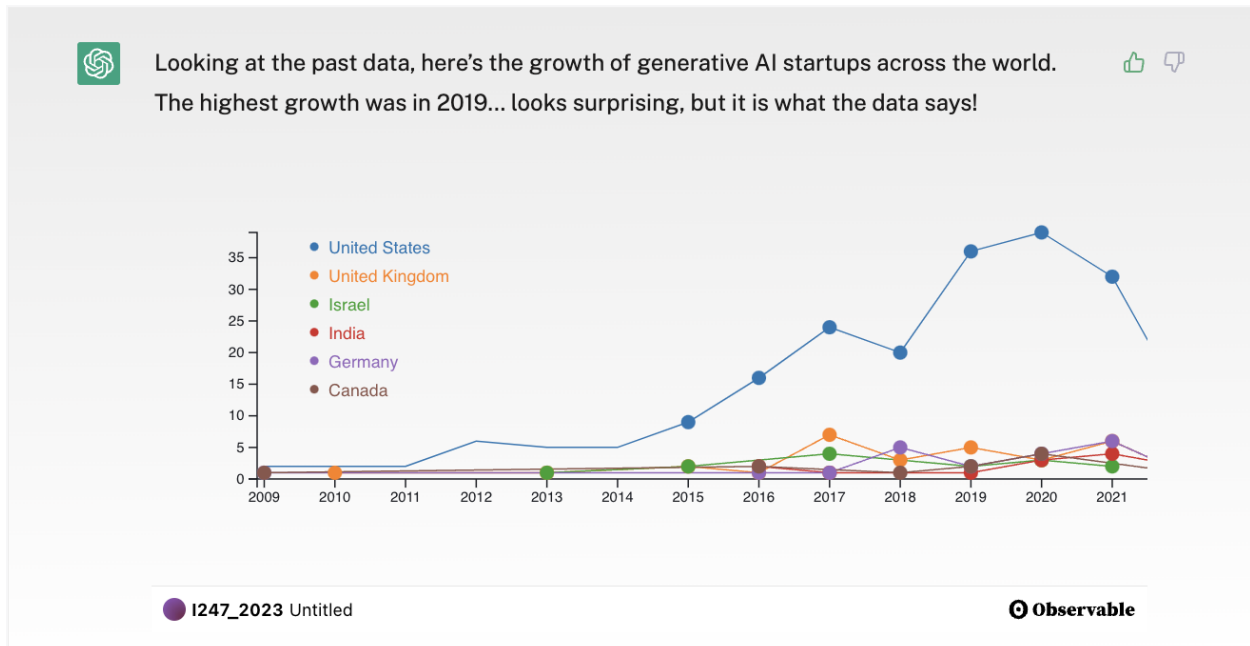
## Descriptions and Screenshots of Visualizations

Here is an image of our entire webpage. Explanations of each individual segment are below.



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1. Growth of Generative AI Startups: This graph shows the growth of Generative AI startups across the world from 2009 to 2021. The y-axis shows the number of startups, and the x-axis shows the years. The graph indicates that the highest growth was observed in 2020, with a slight decline in 2021 because of partial data. This graph helps us understand the trends in the Generative AI industry over the years and provides insights into the rise of Generative AI startups across major AI countries. There is a tooltip that helps the user understand a specific data point.



2. Countries with the Most Generative AI Startups: This graph shows the distribution of Generative AI startups across different countries, with the size of the bubble corresponding to

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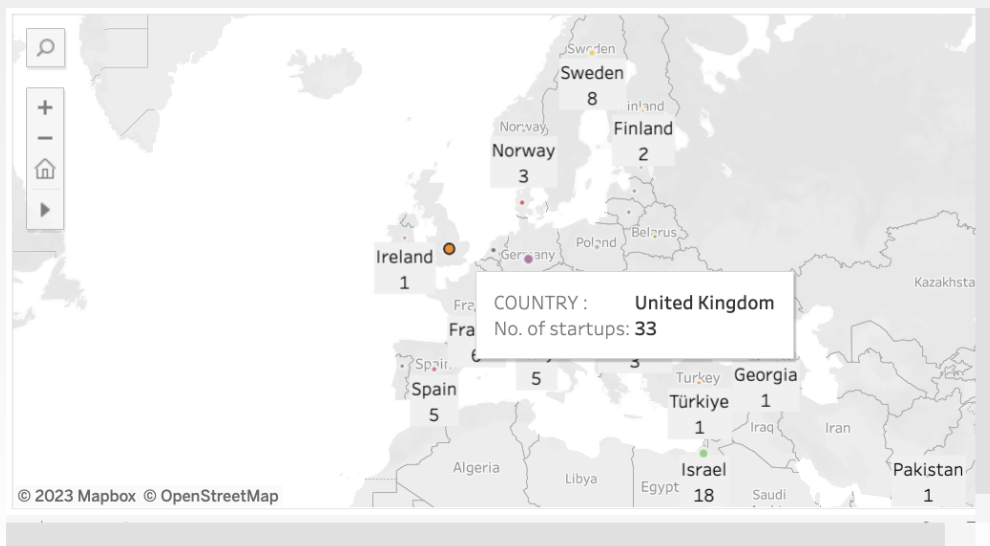
the number of startups in the country. The United States has the highest number of startups, followed by the UK, Germany, Israel, and India. This graph shows the geographical distribution of Generative AI startups and highlights the countries that are leading the industry, providing insights of where the generative AI growth is happening in the world.



As expected, the United States, has the highest number of startups. Note that UK, Germany, Israel and India have a significant number of startups, too. Note that Israel is a new and interesting hub of AI startups.

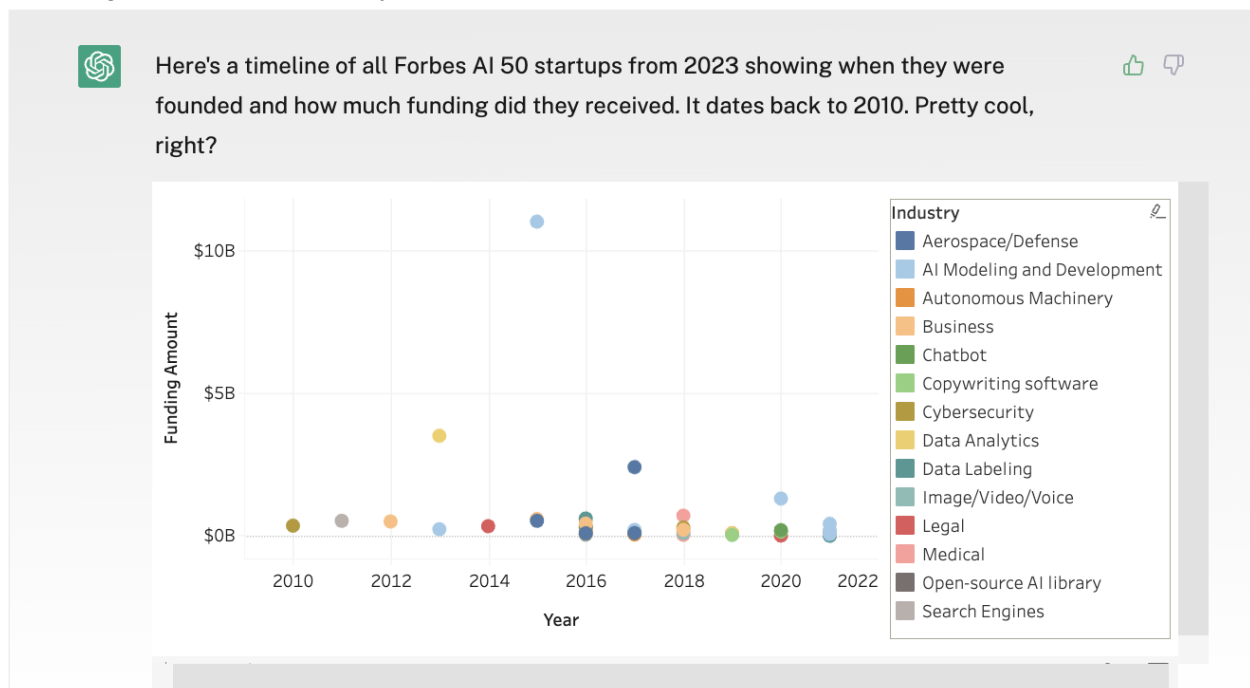


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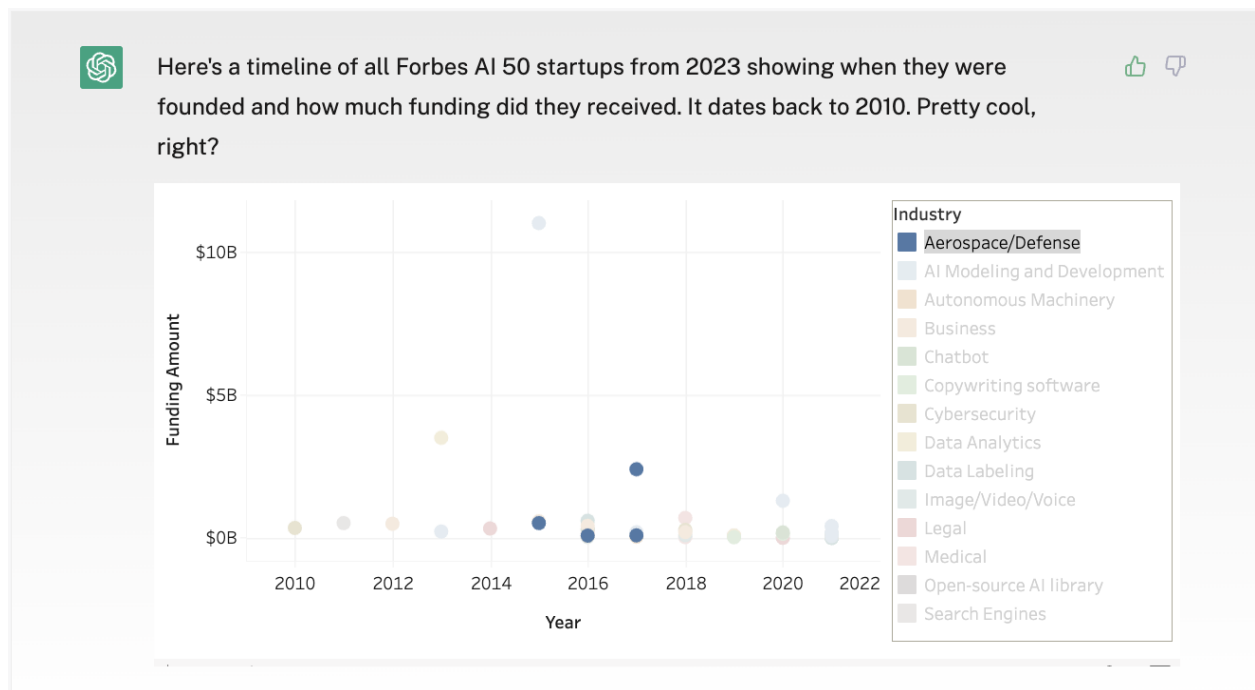
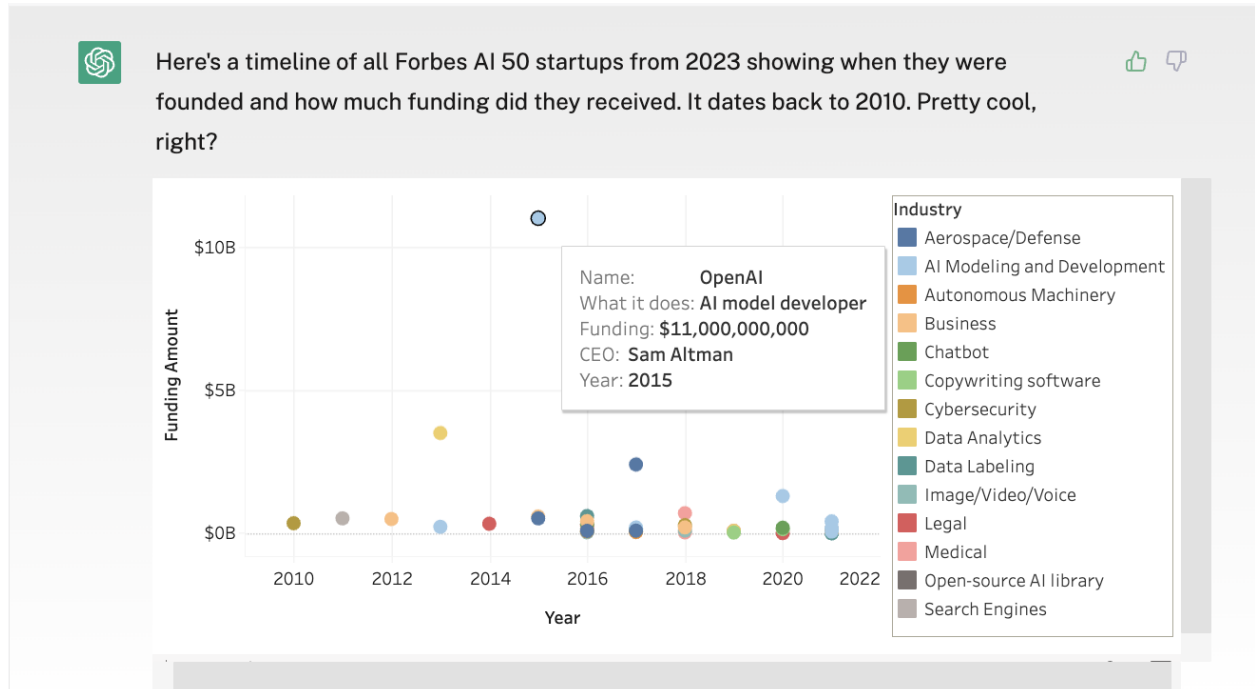


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3. Scatterplot of Forbes AI 50 Startups: This graph is meant to be a further investigation of the information shown on the timeline by showing the funding amounts for each company, which industry segment they belong to, and the year they were founded. The y-axis shows the funding amount and the x-axis are years dating from 2010-2021. The funding amount includes all funding received from the startup date up to 2022. Each dot represents a company and the color of the dot represents the specific industry the company belongs to. Tooltips were also added so the user could investigate more details about each company such as the company name, information about what the company does within its industry, the funding amount, the CEO's name, and the year it was started. This graph was made with Tableau. The first image here shows the original view of this graph, the second image is an example of the tooltip that pops up when a specific point is hovered over, and the third picture shows a filtered view by selecting one specific industry.



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4. Market and Product Types: The below graphs show the breakdown of Gen AI startups by different market types, and different product types respectively. The y-axis shows the number of startups, and the x-axis shows the market types in the first one and product types in the second. This indicates that most startups are targeting Business to Business markets, and the most popular product type is Artificial Intelligence. This graph helps us understand the current landscape of the Gen AI startup industry.



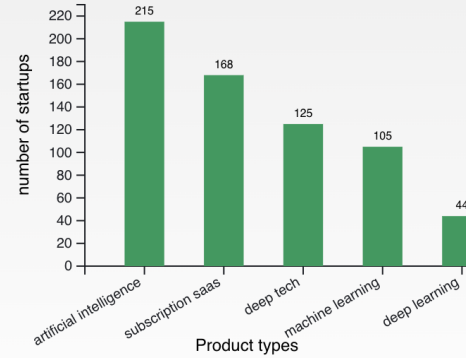
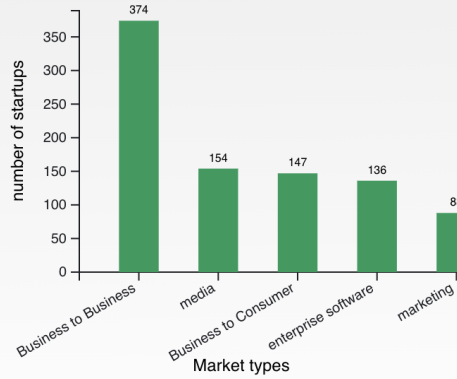
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And, what markets and product types do they target?



Here is a breakdown of Gen AI startups by different market and product types. Looks like Business to Business is the space to be!



I247\_2023 Market & Product types

Observable

I247\_2023 Market & Product types

Observable

5. Open Exploration of the Entire Data: This section provides an open exploration of the entire dataset for users to gain further insights into the Generative AI industry. The text table shows the startup name and key characteristics in the columns such as country, valuation, funding, last round, and type of startup. The table provides an interactive way to explore the dataset through

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filtering by country.



Here's an open exploration of the entire data for you.

## All Startups

Name	COUN..	Valuat..	Fundi..	Last round	Type
10web	United Stat..	\$8–12m	\$2m	\$2m SEED	Null
Adobe Syst..	United Stat..	\$158.2b	-	N/A IPO	subscription
Agentic	United Stat..	-	-	Null	deep tech virtual r
Air	United Stat..	\$48–72m	\$18m	\$10m SERIES B	subscription saas
AirOps	United Stat..	-	-	Null	subscription saas
Algolia	United Stat..	\$2.3b	\$334m	\$150m SERIES D	machine learning b
Amazon We..	United Stat..	-	-	Null	big data deep learr
Amper Music	United Stat..	\$16–24m	\$10.1m	N/A CONVERTIBLE	deep tech machine
Andi	United Stat..	\$2–3m	\$500k	\$500k SEED	artificial intelligenc
Anima App	United Stat..	\$50m	\$15.6m	\$3m EARLY VC	subscription saas
Anthropic	United Stat..	\$2.9b	\$1.0b	\$300m LATE VC	artificial intelligenc
Apple	United Stat..	\$2.4t	\$300k	\$5.0b POST IPO D..	manufacturing
Artbreeder	United Stat..	-	-	Null	artificial intelligenc
Articleforge	United Stat..	-	-	Null	subscription saas
AssemblyAI	United Stat..	\$120–180m	\$58.1m	\$30m SERIES B	deep tech artificial
Autobound	United Stat..	\$16–24m	\$4m	\$4m SEED	Null
Beautiful.AI	United Stat..	\$44–66m	\$16m	\$11m SERIES B	deep tech machine
BHuman	United Stat..	-	-	\$890k SEED	subscription saas
Blackbox	United Stat..	-	-	Null	Null

### COUNTRY

- (All)
- 
- Anguilla
- Australia
- Austria
- Belarus
- Canada
- China
- Colombia
- Czech Republic
- Denmark
- Estonia
- Federated States ...
- Finland
- France
- Georgia
- Germany
- Haiti
- Hong Kong
- India
- Ireland

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Here's an open exploration of the entire data for you.

## All Startups

Name	COUNTRY	Valuation	Funding	Last round	Type
Noty.ai	Ukraine	\$800k—1m	\$200k	\$200k SEED	recognition technology
Reface	Ukraine	\$22—33m	\$5.8m	\$5.5m SEED	mobile app deep learn
Respeecher	Ukraine	\$6—9m	\$1.6m	\$100k SUPPORT P.	recognition technology

### COUNTRY

- Latvia
- Lithuania
- Luxembourg
- Netherlands
- New Zealand
- Nicaragua
- Norway
- Pakistan
- Poland
- Portugal
- Romania
- Singapore
- Slovakia
- South Korea
- Spain
- Sweden
- Switzerland
- Türkiye
- Ukraine
- United Kingdom
- United States

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6. Timeline of Forbes AI 50 Startups: This graph shows a timeline of the Forbes AI 50 startups from 2010 to 2022. The timeline helps us understand the history of some of the major players in the Generative AI space. The color choice was intentional to match with the overall color scheme of the chatGPT interface of the rest of the design. The website itself was meant to look somewhat “futuristic,” therefore the main line of the timeline starts green and fades to transparent. This is meant to resemble certain graphics like a loading bar and also represents that the future of the GAI landscape is unwritten. The timeline went through many iterations in Figma, D3, but finally landed on being produced with CSS.



## Data

- [Dealroom's Top 50 Generative AI Startups to Watch](#)

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- Forbes AI 50 2023 list - <https://www.forbes.com/lists/ai50/?sh=22180a56290f>

### Tools

- Observable Notebook
- Tableau
- D3
- Python
- Figma
- HTML
- CSS

### Results

**Effectiveness of our visualization:** Users are able to accurately understand the information presented and were able to do so quickly based on the tasks we had given them. Users generally liked our straightforward choice of visualizations and were able to improve their understanding of the generative AI industry slightly, especially the biggest startups and the startup hubs in the world. However, we also learned that many things were not as clear to participants, such as how to interact with the graphs as well as terminology such as B2B/B2C. We should be as specific as possible in the future to account for all types of users. Our design also posed as a reality check for the user on how much they really know about the industry.

**Navigation and interaction:** We learned that designing an interface with stunning and informative visualizations is not easy, and requires many iterations. We learnt that apart from being visually appealing we need to ensure that each component is easy to interact with as well. After learning this from our usability study, we were able to make changes and improve our design.

**User preferences:** we gained insight into user preferences and opinions about the information visualization. We learned that our ChatGPT interface was an interesting and creative way of presenting the information about the generative AI industry. Some participants were hoping to do more with the interface like ask it questions directly.

**Quotes:** *“really like the feel of talking to chatgpt”, “I really liked the graph, colour scheme and UI presentation, colour scheme is great, very appropriate.”*

### Contributions

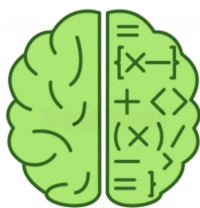
Tasks	Anshita	Melissa	Molly	Richa
Data collection/cleaning				
EDA				
Perspective Design + Storytelling				

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Figma				
Website				
User Tests				
Writeup				

In creating our own graphs, each of us did some data collection and cleaning to ensure our individual graphs worked out. Each of us also contributed to the EDA portion so we could get to know our data better and so that we could decide what insights we wanted to include in our final presentation. Based on our EDA, we also all came up with the design and storytelling aspect of the final product. We each did our own designs in figma, but as a team, we agreed to mostly use Richa's figma design as a starting point of the design of our final website. Richa built the website herself and Anshita, Melissa, and Molly did the user tests in an effort to break up the workload. Richa produced the first graph on the final product, Molly produced the map and the data table, Melissa produced the scatterplot and the timeline, and Anshita produced the bar graphs. All of us sent our code over to Richa to be embedded in the website and toward the final stages of the design, each of us had access to the github website to make any small changes. Each of us contributed evenly to the write up.

### Thumbnail Image:



Gen AI  
Since 2010s

### Software

All code can be found on <https://github.com/DashQueries/dashqueries.github.io>.

All links for the individual charts can be found in the ReadMe file.

### Learnings and Conclusion

Overall, we believe that our website provides useful visualizations and insights into the Generative AI industry, and the graphs help users understand the trends and patterns in the industry over the years. We learned so much about the importance of planning your story and what information you want to portray throughout this process. We also learned through our

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usability tests that just because something can be done, it does not mean it is the best representation for the overall goal of the project. It is important to adhere to the principles of design over needless interactivity and sometimes simple solutions are the best.