Generative AI: The VC Landscape

Harlem Capital

Generative AI investments have been heating up, especially in the VC market
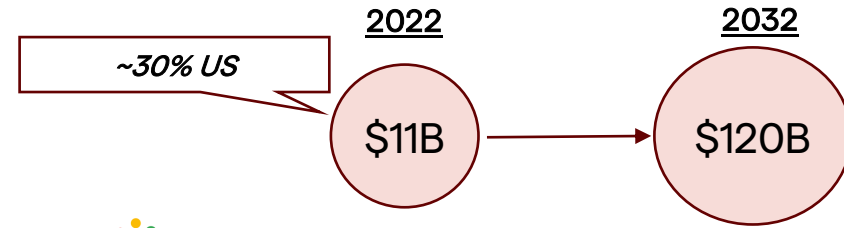
Why the hype?

Generative AI has been widely regarded as a transformative force across multiple sectors, leveraging models that imitate human thought processes through the utilization of algorithms that progressively learn during their use.

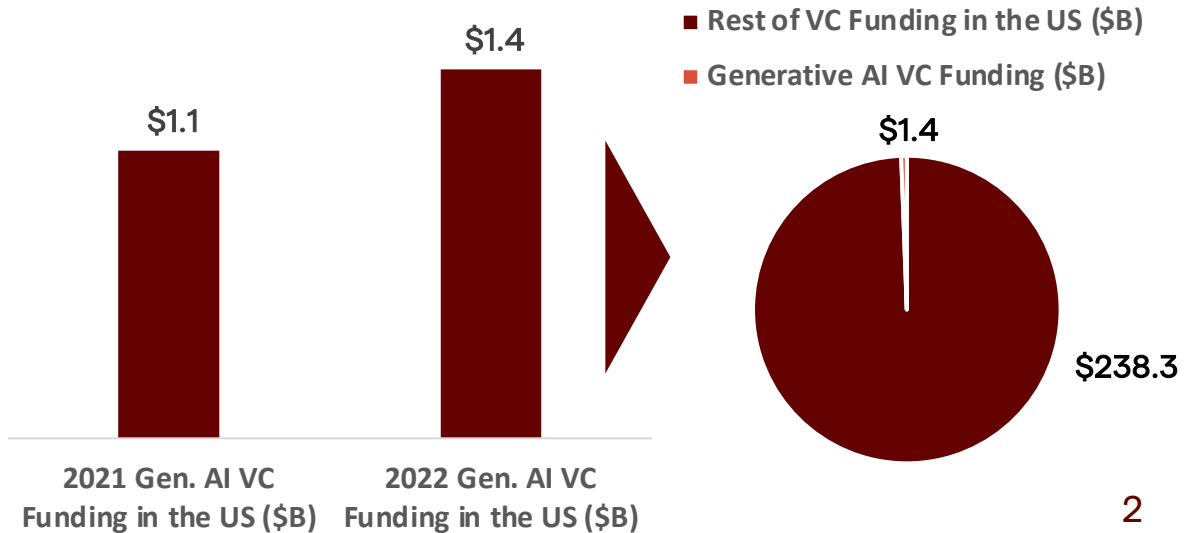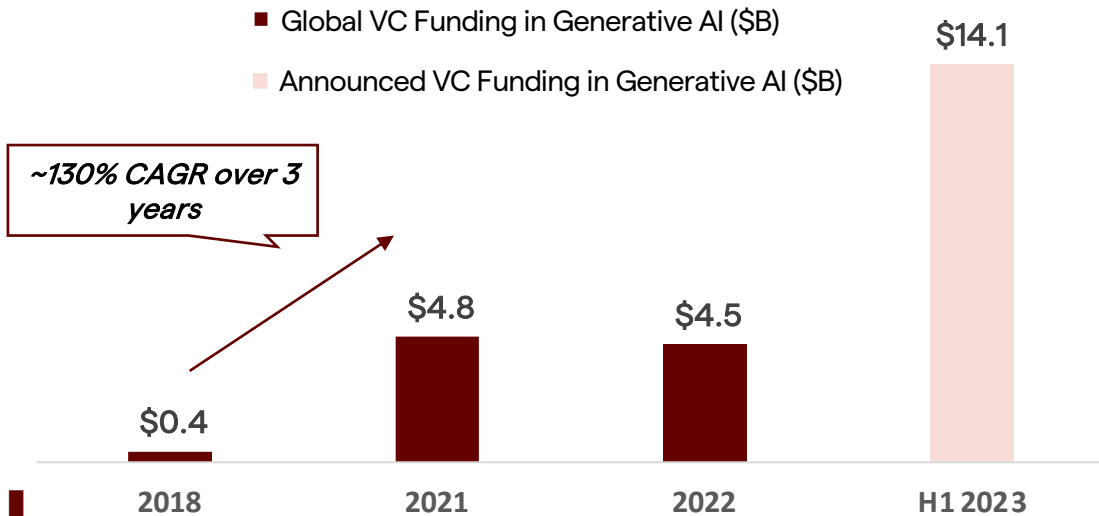**Big Tech has quickly jumped on the opportunity** ▶

OpenAI | Microsoft

Microsoft invested ~$10B in OpenAI

Global AI revenue reached ~$11B in 2022, projected to be ~$120B in 2032

2022   2032

~30% US $11B → $120B

Google AI

Developed LaMDA, BARD, PaLM (LLMs & tools)

Meta AI

Developed LLaMA, differentiated by weight transparency

Global: VCs have been pouring money into Generative AI startups

- ■ Global VC Funding in Generative AI ($B)
- ■ Announced VC Funding in Generative AI ($B)

~130% CAGR over 3 years

$0.4	$4.8	$4.5	$14.1
2018	2021	2022	H1 2023

US: Even with ~27% growth YoY, there is still plenty of opportunity

- ■ Rest of VC Funding in the US ($B)
- ■ Generative AI VC Funding ($B)

$1.1	$1.4
2021 Gen. AI VC Funding in the US ($B)	2022 Gen. AI VC Funding in the US ($B)

$1.4

$238.3

Tech execs are looking to spend big on AI to improve customer experience

47% Top tech officers (e.g., CIO, CTO) say AI is their #1 budget item over the next year[1]

45% Stated that the publicity of ChatGPT has prompted them to increase AI investments[2]

38% Stated that customer experience was the primary focus of investments[2]
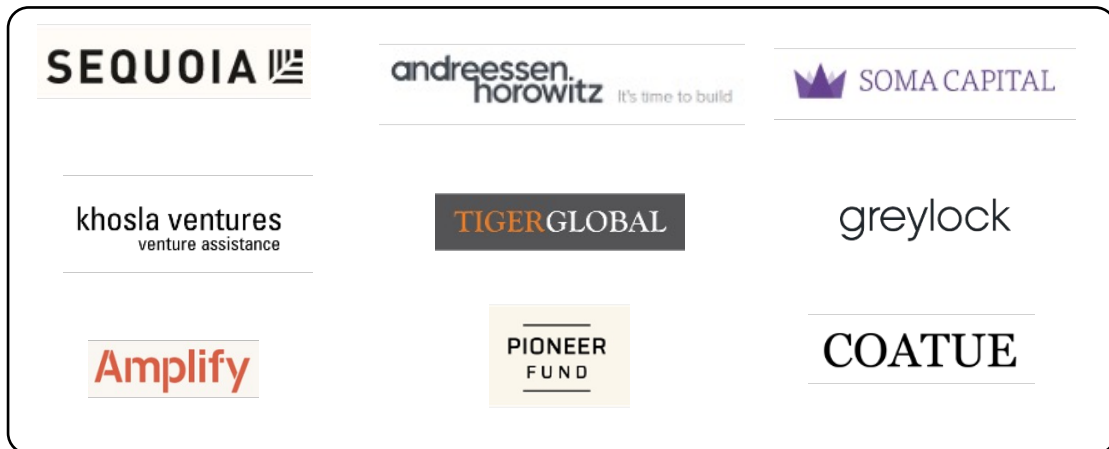
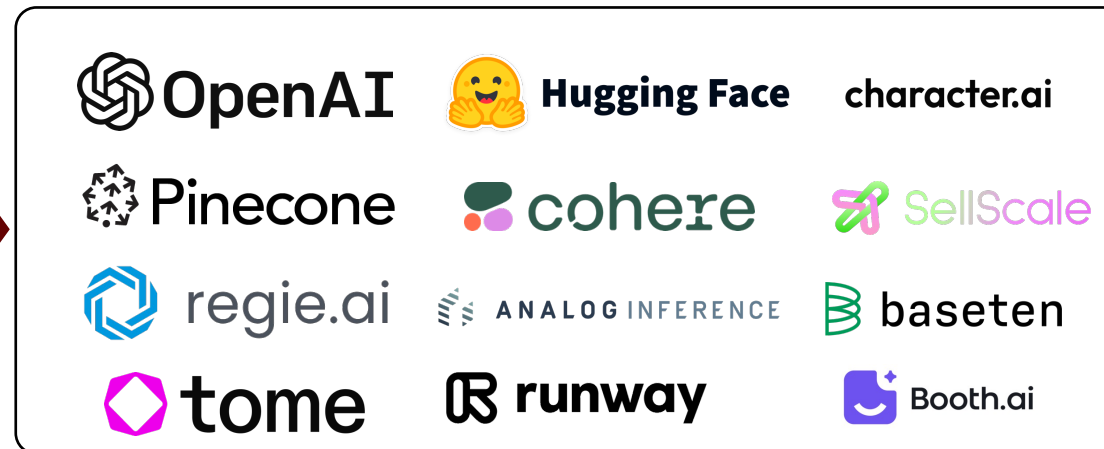**68%** Stated that execs believe that the benefits of Gen AI outweigh the risks[2]

Top VCs are aggressively pursuing opportunities in Generative AI

The Most Active US based VCs...

SEQUOIA

andreessen. horowitz It's time to build

SOMA CAPITAL

khosla ventures venture assistance

TIGERGLOBAL

greylock

Amplify

PIONEER FUND

COATUE

...have made over 200 investments in Generative AI since 2017

OpenAI   🤗 Hugging Face   character.ai

Pinecone   cohere   SellScale

regie.ai   ANALOG INFERENCE   baseten

tome   runway   Booth.ai

Although ~66% of Generative AI companies have not raised a Series A round, we have already seen 13 reach unicorn status ($B)

~50% greater than the rest of the unicorns combined

■ Valuation ($B)

$29.0

ANTHROP\C   🤗 Hugging Face   runway   replit   ADEPT   stability.ai

$4.4 $2.0 $2.0 $1.8 $1.5 $1.5 $1.2 $1.2 $1.0 $1.0 $1.0 $1.0

OpenAI   cohere   Lightricks   Jasper   Inflection   character.ai   glean
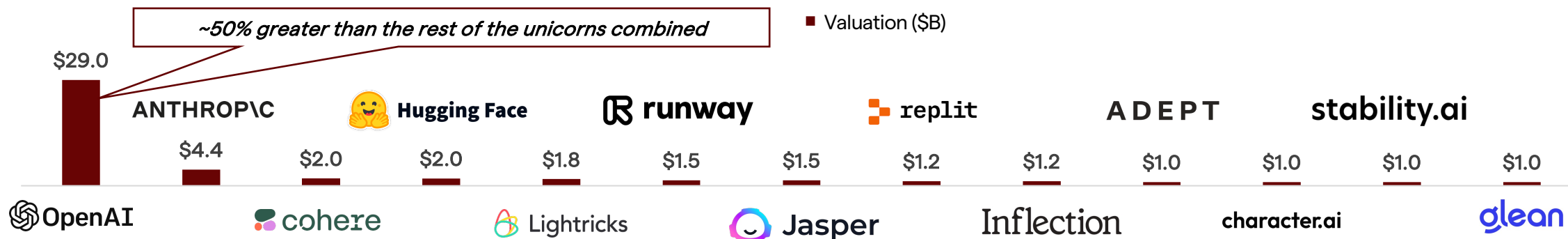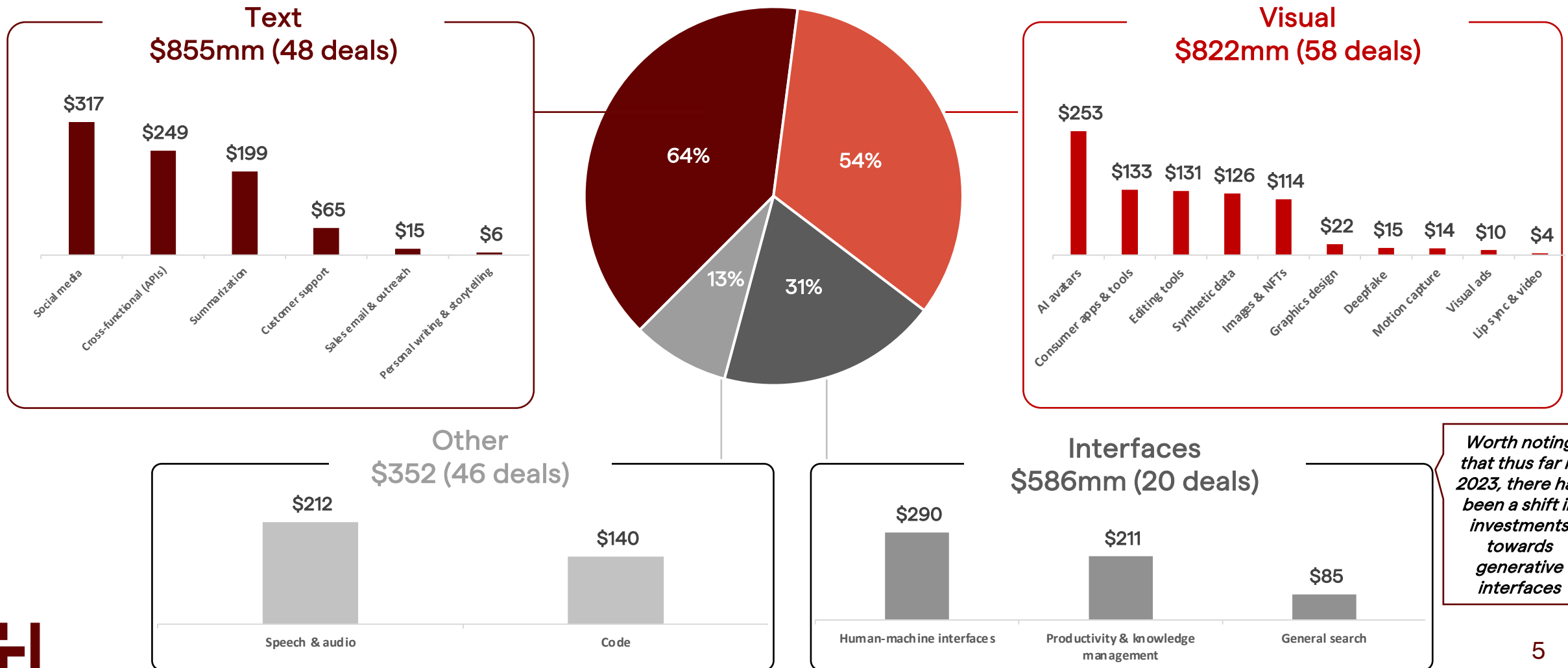
The average time for these companies to reach unicorn status is ~3.5 years. The average amongst all other unicorns is ~7 years.

Through 2022, more than 50% of VC investments in Generative AI have been in the text & visual media segments

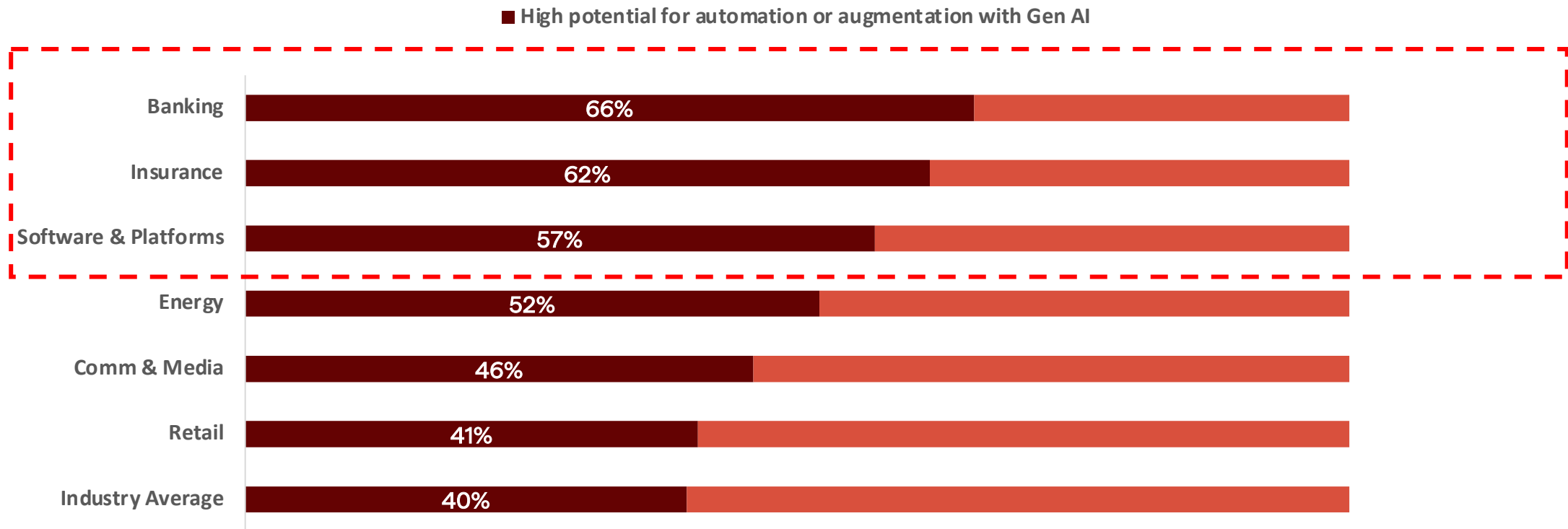**% of Global VC Investment in Generative AI by Industry Segment from 2021-2022**

Text
$855mm (48 deals)

- Social media: $317
- Cross-functional (APIs): $249
- Summarization: $199
- Customer support: $65
- Sales email & outreach: $15
- Personal writing & storytelling: $6

Visual
$822mm (58 deals)

- AI avatars: $253
- Consumer apps & tools: $133
- Editing tools: $131
- Synthetic data: $126
- Images & NFTs: $114
- Graphics design: $22
- Deepfake: $15
- Motion capture: $14
- Visual ads: $10
- Lip sync & video: $4

Pie chart: 64%, 54%, 13%, 31%

Other
$352 (46 deals)

- Speech & audio: $212
- Code: $140

Interfaces
$586mm (20 deals)

- Human-machine interfaces: $290
- Productivity & knowledge management: $211
- General search: $85

Worth noting that thus far in 2023, there has been a shift in investments towards generative interfaces

5

Banking, Insurance, & Software lead the way for industries ripe for change with the incoming use of Generative AI technology

% of tasks with the most potential to be automated or augmented with Generative AI[1]

■ High potential for automation or augmentation with Gen AI

Industry	High potential
Banking	66%
Insurance	62%
Software & Platforms	57%
Energy	52%
Comm & Media	46%
Retail	41%
Industry Average	40%

When evaluating Generative AI opportunities, VCs should give special consideration to these industries that are more susceptible to change

1. Based on study by Accenture who manually identified 200 tasks related to language (out of 332 included in BLS), which were linked to industries using their share in each occupation and the occupations' employment level in each industry. Tasks with higher potential for automation can be transformed by LLMs with reduced involvement from a human worker. Tasks with higher potential for augmentation are those in which LLMs would need more involvement from human workers.

Opportunities in Generative AI span across each of these verticals within each of the hot VC industry segments

Vertical	Text	Visual	Interfaces	Other (e.g., Speech & Audio, Code)
Banking	- Loan applications - Financial advice	- Authentications & Biometrics	- Risk management - Compliance - KYC/AML	- Fraud alerts - Voice assistants - Decision-making (customer acquisition, credit decision making)
Insurance	- Customer support	- Policy acquisition (smart quoting engines) - Risk assessment (geospatial imagery)	- Claims management	- Fraud alerts - Underwriting automation - Predictive pricing - Marketing
Software & Platforms	- Sales optimization	- User behavior insights (consumer apps)	- Analytics platform - Performance management	- Voice authentication - No code app development

Ample due diligence is required when investing in AI given the various risks

Ethical Risks

- Susceptible to inaccuracies, discriminatory outcomes, biases, etc. which will require policies for data collection, storage, and usage

Cyber Risks

- Prone to cyber attacks which require security audits, encryption, training programs, etc.

Regulatory Risks

- AI regulatory landscape is still in its infancy and could change drastically
- In 2023, the EU approved a draft legislation that already created limitations in the space

How an AI startup handles these risks could significantly impact whether they should be viewed as a viable investment opportunity

Conclusion: Big 3 Considerations when investing in Generative AI

1 **AI Segments** | The hot AI segments are in **Text & Visual Media**

2 **Verticals** | Verticals primed for AI intervention are **Banking, Insurance, and Software**

3 **Risks** | A variety of risks come with investing in AI, including **Ethical, Cyber, and Regulatory risks**

Breakdown of Generate AI companies mentioned in deck (1/4)

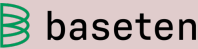| Company	Description	Amount Raised ($M)	Notable Investors
OpenAI	- AI research and deployment company that conducts research and implements machine learning.	- $11,300	- Andreessen Horowitz - Thrive Capital - Sequoia Capital
ANTHROP\C	- An AI safety and research company that's working to build reliable, interpretable, and steerable AI systems.	- $1,500	- Google - Salesforce Ventures - Spark Capital
cohere	- Provides access to advanced Large Language Models and NLP tools through one easy-to-use API.	- $435	- NVDIA - Index Ventures - Inovia Capital
Hugging Face	- Allows users to build, train, and deploy art models using the reference open source in machine learning.	- $160	- Thirty Five Ventures - Sequoia Capital - Lux Capital
Lightricks	- Develops creativity tools that enable its users to craft and share visual content on mobile devices.	- $335	- Insight Partners - Hanaco Venture Capital - Shavit Capital

Breakdown of Generate AI companies mentioned in deck (2/4)

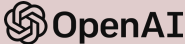| Company	Description	Amount Raised ($M)	Notable Investors
runway	- An applied AI research company that builds the next generation of creativity tools.	- $237	- Rogue VC - Lux Capital - Amplify Partners
Jasper	- AI writing tool that helps businesses create content.	- $131	- Bassemer Venture Partners - Founders Circle Capital - Foundation Capital
replit	- A browser-based integrated development environment for cross-platform collaborative coding.	- $202	- Andreessen Horowitz - YC - Khosla Ventures
Inflection	- Inflection AI is an artificial intelligence startup that develops personal AI chatbots.	- $1,500	- NVIDIA - CoreWeave - Microsoft
ADEPT	- Machine learning research and product lab that builds general artificial intelligence.	- $415	- Atlassian Ventures - Microsoft - Frontiers Capital

Breakdown of Generate AI companies mentioned in deck (3/4)

Company	Description	Amount Raised ($M)	Notable Investors
character.ai	- Provides open-ended conversational applications in which users create characters and converse with them.	- $150	- Andreessen Horowitz - A. Capital Ventures - SVA
stability.ai	- Artificial intelligence-driven visual art startup that designs and implements open AI tools.	- $124	- Sound Ventures - Lightspeed Venture Partners - Fourth Revolution Capital s
glean	- AI-powered workplace search. Across all your company's apps.	- $155	- Lightspeed Venture Partners - Sequoia Capital - General Catalyst
Pinecone	- Develops a vector database that makes it easy to connect company data with generative AI models.	- $138	- Andreessen Horowitz - Menlo Ventures - Wing Venture Capital
SellScale	- A sales and marketing software that uses artificial intelligence to generate better marketing emails.	- $3	- Pear VC - Exponent Venture Capital - Four Acres Capital

Breakdown of Generate AI companies mentioned in deck (4/4)

Company	Description	Amount Raised ($M)	Notable Investors
regie.ai	- An all-in-one AI content creation and management system for modern GTM teams.	- $21	- Khosla Ventures - Day One Ventures - Scale Venture Partners
ANALOG INFERENCE	- A semiconductor company developing products in the neural computing segment.	- $51	- Alumni Ventures - TDK Ventures - Khosla Ventures
baseten	- A serverless backend that offers a fast way to build machine-learning-powered applications.	- $20	- AI Fund - South Park Commons - Caffeinated Capital
tome	- An AI-powered, storytelling productivity tool that helps users transform ideas into visually appealing narratives.	- $75	- Audacious Ventures - Wing Venture Capital - Lightspeed Venture Partners
Booth.ai	- Generative AI-powered product photography platform.	- $1	- YC - Caffeinated Capital

Breakdown of Top LLM models (1/3)

Company	Callout LLM Models	Details	Open Source?
1 OpenAI	- GPT-4	- Accepts text and image inputs - Scores close to 80% in factual evaluation across several categories - Trained on 1+ trillion parameters - Supports a max context length of 32k tokens - Plugins to browse the web	- No
	- GPT-3	- Fast model and generates a complete response within seconds - Supports a 16k context length - Free to use with no restrictions - Trained on 175 billion parameters	- No
2 Google AI	- PaLM 2 (Bison-001)	- Concentrates on aspects such as commonsense reasoning, formal logic, mathematics, advanced coding, etc. - 540 bn parameters - Max context length of 4096 tokens - Multilingual capabilities	- No

1. Other models include Codex, Text-ada-001, Text-babbage-001, Text-curie-001
2. Other models include Gecko, Otter, and Unicorn

Breakdown of Top LLM models (2/3)

Company	Callout LLM Models	Details	Open Source?
ANTHROP\C	- Claude 1	- Specified mission in creating AI assistants - 100k tokens, largest context window – users can load close to 75k words in a single window	- No
cohere	- Cohere Command model	- For enterprises and solving generative AI use cases for corporation - According to Standford HELM, the Cohere Command model has the highest score for accuracy among its peers. - Companies like Spotify, Jasper, HyperWrite, etc. are all using Cohere's model to deliver an AI experience. - $15 to generate 1 million tokens	- No
TII Technology Innovation Institute	- Falcon	- Open-sourced with Apache 2.0 license, (can use the model for commercial purposes). - No royalties or restrictions either. - Two Falcon models, which are trained on 40B and 7B parameters - trained in English, German, Spanish, and French, but it can also work in Italian, Portuguese, Polish, Dutch, Romanian, Czech, and Swedish languages	- Yes

Breakdown of Top LLM models (3/3)

Company	Callout LLM Models	Details	Open Source?
Meta AI	- LLaMA 65B model	- 65 bn parameters depending on the model - Open source - Many developers are using LLaMA to fine-tune and create some of the best open-source models out there. - The company has used publicly available data from CommonCrawl, C4, GitHub, ArXiv, Wikipedia, StackExchange, and more. - Research only (can't be used commercially unlike the Falcon model by the TII)	- Yes
	- Guanaco-65B	- 4 versions of Guanaco: 7B, 13B, 33B, and 65B models - Researchers came up with a new technique called QLoRA that efficiently reduces memory usage while preserving full 16-bit task performance - Trained on a single GPU having 48GB of VRAM in just 24 hours (reducing cost and maintaining quality)	- Yes
LMSYS	- Vicuna 33B	- Fine-tuned using supervised instruction and the training data has been collected from sharegpt.com, a portal where users share their ChatGPT conversations. - Trained on 33 billion parameters	- Yes

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