



BioVEE

Biomedical Knowledge Visualization
Everything Everywhere

NAVIGATE COMPREHENSIVE BIOMEDICAL KNOWLEDGE AT YOUR FINGERTIPS!

December 4th, 2024

Team – Medical AI Researcher and Entrepreneur



Dr. Hua Xu

Robert T. McCluskey Professor and Vice Chair for Research, Department of Biomedical Informatics and Data Science

Assistant Dean for Biomedical Informatics, YSM
World renowned expert in biomedical natural language processing (NLP)



Dr. Huan He

Research Scientist, Department of Biomedical Informatics and Data Science

Expert in biomedical data visualization

Xu Lab Information



- 10 developers
- 20 research scientists, postdocs, PhDs
- Top ranked in over 12 international biomedical NLP challenges

Medical AI Software



- CLAMP – an NLP system used by over 600 healthcare systems
- Me LLaMA – Foundation Large Language Models for biomedical applications

Commercialization Experience



- Founder of Melax Tech – to commercialize CLAMP
- Grow Melax to 25 FTEs with \$5M annual revenue
- Successful exit – Melax was acquired by IMO Inc. in 2023

Problem



(Glucagon-like peptide-1 receptor agonist) OR (GLP-1 receptor agonist) OI



Search

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Save

Email

Send to

Sort by:

Best match



Display options

MY CUSTOM FILTERS

21,391 results



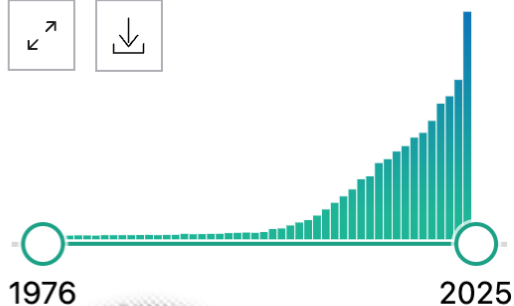
Page

1

of 214



RESULTS BY YEAR



Semaglutide and Cardiovascular Outcomes in Obesity without Diabetes.

1

Lincoff AM, Brown-Frandsen K, Colhoun HM, Deanfield J, Emerson SS, Esbjerg S, Hardt-Lindberg S, Hovingh GK, Kahn SE, Kushner RF, Lingvay I, Oral TK, Michelsen MM, Plutzky J, Tornøe CW, Ryan DH; SELECT Trial Investigators.

Cite

N Engl J Med. 2023 Dec 14;389(24):2221-2232. doi: 10.1056/NEJMoa2307563. Epub 2023 Nov 11.

PMID: 37952131 Clinical Trial.

BACKGROUND: **Semaglutide**, a **glucagon-like peptide-1 receptor agonist**, has been shown to reduce the risk of adverse cardiovascular events in patients with diabetes. ...RESULTS: A total of

17,604 patients were enrolled; 8,773 were assi



Comparative effectiveness of GLP-1 receptor agonists on glycaemic control, body weight, and hypoglycaemia for type 2 diabetes: systematic review and network

Cite

meta-analysis.

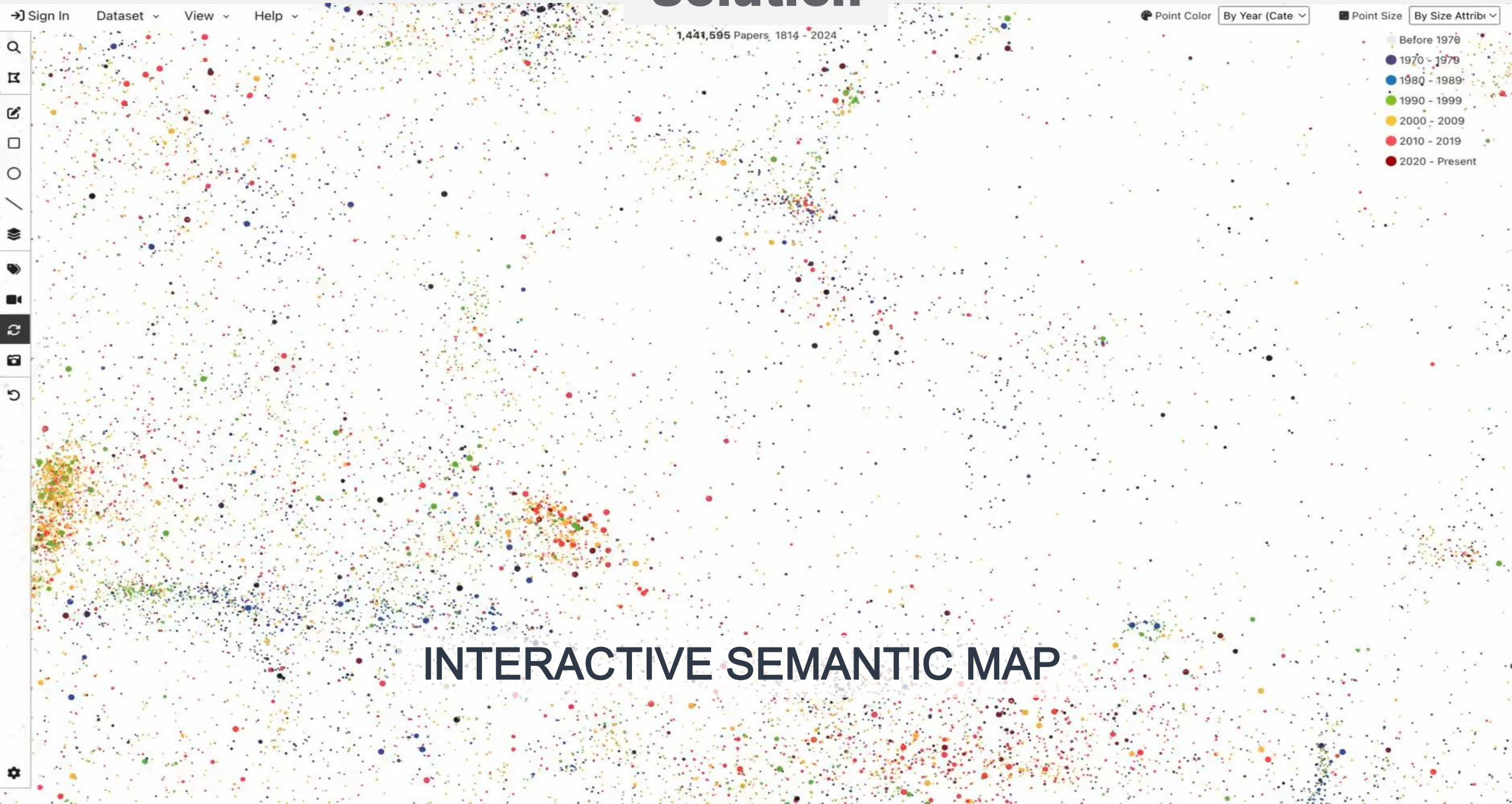
Yao H, Zhang A, Li D, Wu Y, Wang CZ, Wang JY, Yuan CS



No landscape overview of research areas and trends

Time-consuming to extract information of interest

Solution



Technical Advances

Biomedical LLMs



Support both cloud and on-premises LLMs

Me LLaMA* - trained using 129B tokens of biomedical text - 160 A100 x 1 month

Semantic Visualization



Novel algorithms for topics, trends, and hypotheses modeling

LargeVis+ - dimension reduction
Dynamic updates
Temporal topic analysis
New space explorer

Interactive UI



Navigate, search, and retrieve answers at fingertips

Large semantic map (100+M)
Semantic search
Interactive selection
QA via voice commands

Deep Domain Knowledge



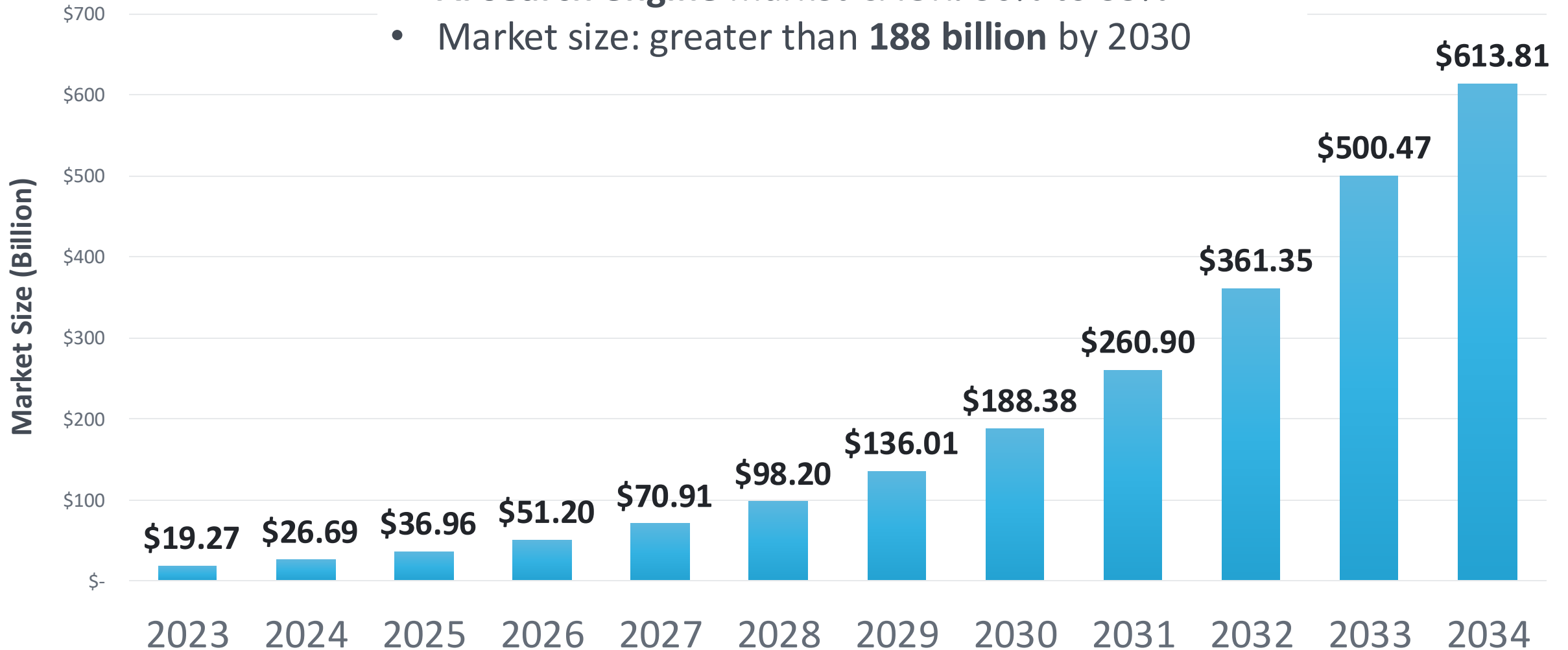
Fully integrated with domain-specific applications

Closely work with domain experts on diverse use cases to ensure seamless integration with workflows

* Xie Q et. al. Me LLaMA: Foundation Large Language Models for Medical Applications. <https://arxiv.org/abs/2402.12749>.

Opportunities

- **AI search engine** market CAGR: 30% to 35%
- Market size: greater than **188 billion** by 2030



Market Sectors and Business Models



Pharma Industry

- Literature – target discovery + systematic review
- Clinical trials, patents, etc. – competitors
- Internal documents – search + QA
- **Discussing potential licensing with Eli Lilly, Regeneron, and Pfizer**



Biomedical Library

- Search for local collections
- Librarian services



Publishers / Journals

- Journal impact
- Strategy planning



Researchers

- Hypothesis generation
- Research insights



Annual Licenses

- Enterprise-level license
 - On-premises service
 - Online service
- Individual subscription



Volume-based SaaS

- Chatbot APIs



Service Contracts

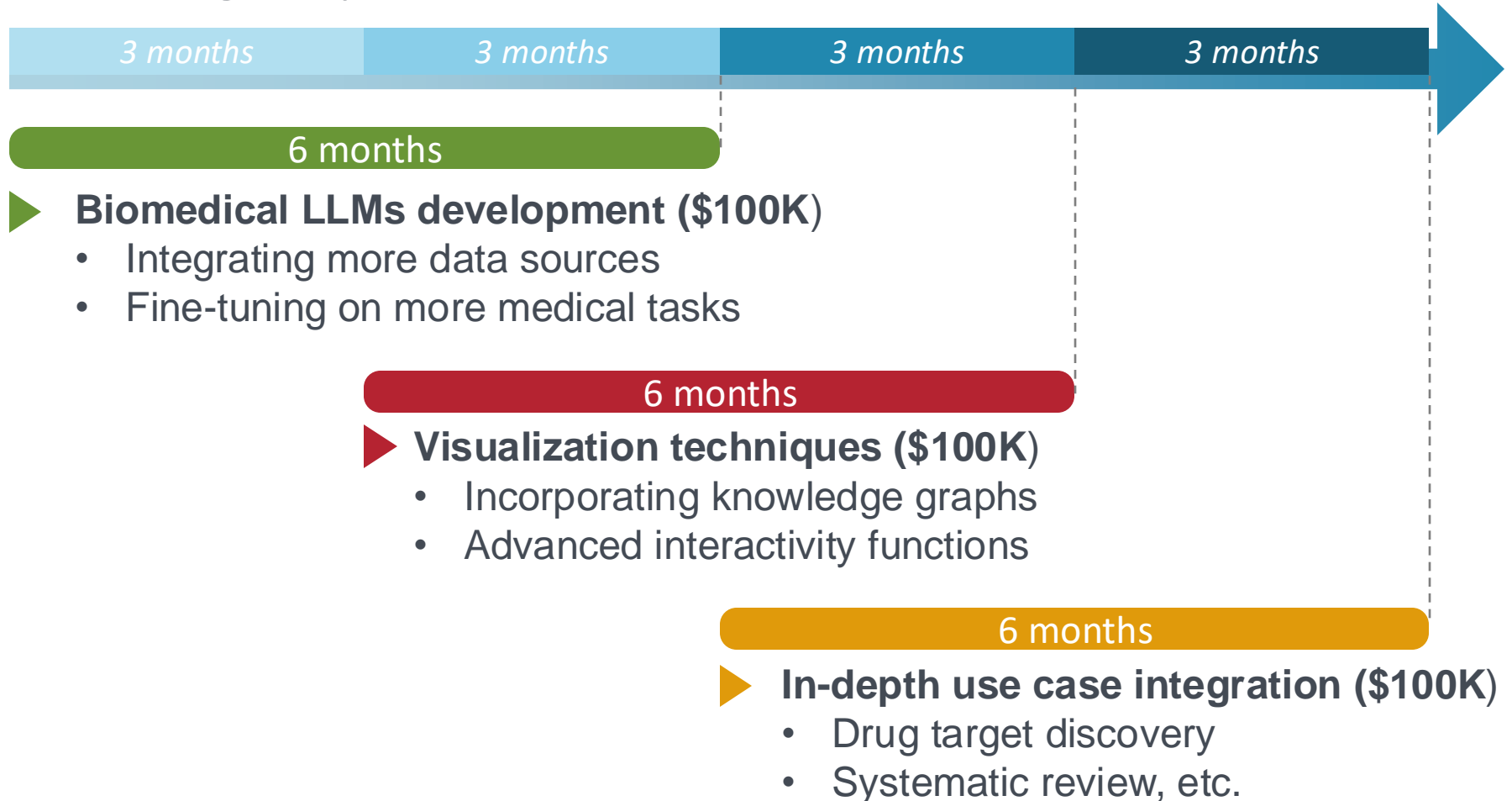
- Customization for specific use cases

Competitive Landscape

	BioVEE	Iris.ai	Nomic AI	Litmaps	Semantic Scholar
Visualization of hundreds of millions of papers	✓	✗	✓	✗	✗
Interactive question answering	✓	✗	✗	✓	✗
Foundation LLM trained on biomedical data	✓	✗	✗	✗	✗
Context-aware chatbot integration	✓	✓	✗	✗	✗
Healthcare-related databases integration	✓	✗	✗	✗	✗
Paper summarization and extraction	✓	✓	✗	✗	✓

Budget and Milestones

Development Award \$300K for a period of 12 months mainly for enhancing our product



LOOK FOR
INVESTMENT



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Hua Xu, PhD



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System Demo:
<https://medviz.org>