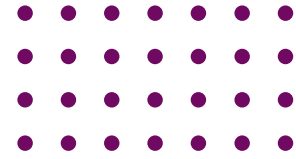




# NAVIGATING THE FUTURE OF SOFTWARE ENGINEERING



## AI-DRIVEN SOLUTIONS BY MARU AI

BRIDGING TALENT GAPS  
AND SIMPLIFYING CODE  
COMPLEXITY IN THE  
DIGITAL AGE



maru.ai



maru ai



# Executive Summary

The integration of Artificial Intelligence (AI) in eCommerce is not just a trend—it's a revolution. With global eCommerce sales projected to reach \$7.3 trillion by 2025, AI's role becomes pivotal. Maru AI stands at the forefront of this transformation, offering cutting-edge solutions to address the increasing complexity of software systems and the widening engineering talent gap. Our approach not only aligns with the rapid growth of the AI sector in eCommerce, currently valued at \$5.81 billion and expected to soar to approximately \$22.60 billion by 2032, but also significantly enhances eCommerce operations.

## Complex Code

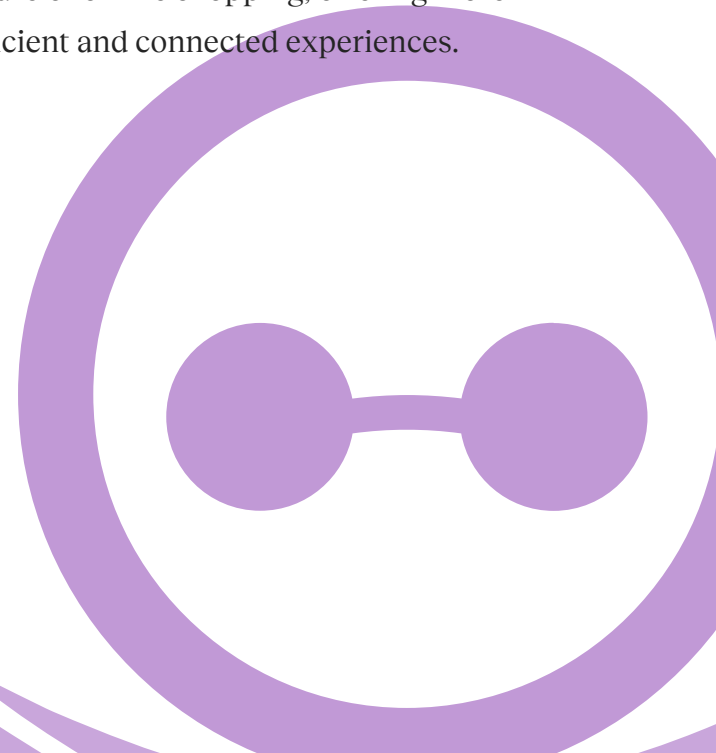
In eCommerce, managing code complexity is crucial for platform adaptability and efficiency. Simplified, readable code is key to maintaining a responsive and scalable eCommerce platform in a fast-evolving digital market.

## Talent Gap

The engineering talent gap in the US is widening, with a notable mismatch between the growing demand for tech skills and the available workforce. This shortage, exacerbated by a significant number of STEM graduates not pursuing relevant careers, challenges companies in sourcing and retaining qualified engineers, impacting their ability to develop and maintain complex software systems.

## AI use

The integration of artificial intelligence is revolutionizing eCommerce, enhancing customer experiences and streamlining operations. This evolution of AI technologies is pivotal in shaping the future of online shopping, offering more efficient and connected experiences.



# Complexity in Code and Systems

In the dynamic realm of eCommerce, navigating the intricate labyrinth of code complexity is more than a technical challenge; it's a strategic imperative. This complexity, a blend of essential and accidental intricacies, directly impacts the platform's adaptability and efficiency. A heavy, convoluted codebase can stifle the agility necessary in the fast-paced digital marketplace, making it difficult to respond swiftly to evolving consumer demands and market trends. Simplifying code, prioritizing readability, and cautiously managing dependencies are not merely coding practices but crucial business strategies. They ensure that an e-commerce platform remains resilient, scalable, and capable of delivering superior user experiences. Thus, the mastery of code complexity in eCommerce transcends technical prowess, becoming a key determinant of a platform's success and longevity in a constantly changing digital landscape.

## Supporting Thoughts

- **Impact on Business:** High code complexity can lead to increased review times and maintenance demands, impacting overall business productivity. Code that is difficult to maintain consumes more time, reducing hours available for other tasks.
- **Testing and Maintenance:** Complex code systems can increase the number of test cases, heighten the risk of missing test cases, and prolong testing time due to their intricate nature.
- **Resource Consumption:** Complexity in code can directly affect compilation times, increasing the compute resources consumed and wasting productive hours for engineers.
- **Factors Increasing Complexity:** Lack of documentation, poor architectural decisions, over-optimization, improper task allocation, and constantly evolving project requirements contribute to increased code complexity.

[Hatica]

**69%** of SME executives feel there's a shortage of top talent

EACH YEAR IN THE US

**344K**  
jobs requiring a  
tech degree

**258K**  
tech graduates

MOST IN-DEMAND ROLES

4	SOFTWARE DEVELOPER
5	QA ENGINEER
<b>6</b>	<b>IT</b>
7	SYSTEMS ADMINISTRATOR
8	DATA ANALYST

**25%** increase in employment opportunities awaits software developers, QA engineers, and testers over the next decade



**10.8%** growth rate is expected for jobs in science, technology, engineering, and mathematics through 2032

Only 51% of people who majored in computer, mathematics, and statistics pursue a career in STEM fields

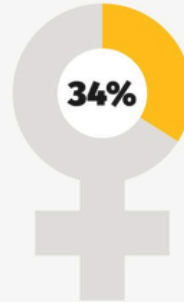
**51%**



**#12**

COMPUTER SCIENCE IS #12 MOST POPULAR MAJOR IN THE US

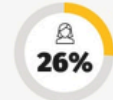
Women constitute 34% of the **STEM workforce**



SHARES OF FEMALE STEM PROFESSIONALS



Engineering



Computer and mathematical sciences

Women earn a relatively small portion of bachelor's degrees in

	<b>24%</b>	<b>21%</b>	<b>24%</b>
Engineering	Computer science	Physics	

## Engineering Talent Gap

The demand for engineering talent is outpacing supply, creating a significant talent gap that needs to be addressed. Companies are increasingly finding it difficult to source and retain qualified engineers, which hinders their ability to develop and maintain complex software systems.

### Supporting Thoughts

- Labor statistics indicate a gap of 1.4 million unfilled tech jobs in the US, with an annual projection of 344K new vacancies, emphasizing the persistent issue over the next decade.
- By 2026, the shortage of developers in the US is expected to exceed 1.2 million, with 545K current software engineers predicted to have left the market by then.
- ManpowerGroup reports that between 66% to 90% of US employers struggle to find the necessary tech skills, making it one of the top 10 hardest roles to fill.
- Only about half of the individuals who majored in relevant fields pursue a career in STEM, compounding the issue.
- The number of STEM jobs is expected to grow by 10.8%, with software developer roles increasing by 25% from 2022 to 2032.
- The talent gap forces software companies to hire candidates who do not fully meet job requirements, impacting the quality of products and services.

[Grid Dynamics]

# Engineering Talent Gap

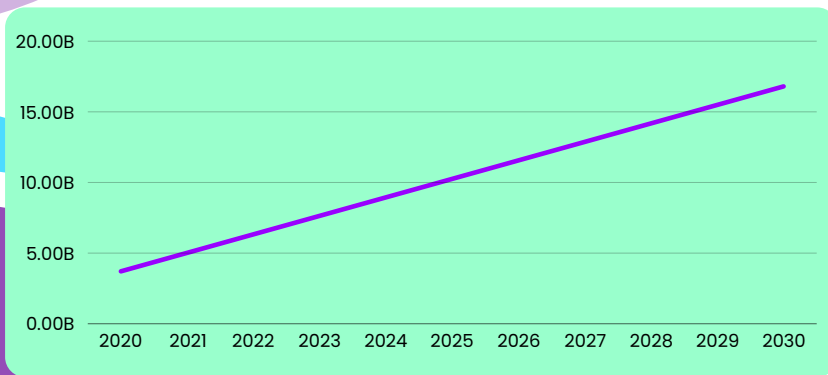
The eCommerce industry is experiencing significant growth, with projections indicating that global e-commerce sales are expected to reach \$7.3 trillion by 2025. AI is a critical factor in this growth, as its role in eCommerce has been rapidly expanding. The market size for AI in e-commerce was valued at USD 5.81 billion in 2022 and is projected to hit around USD 22.60 billion by 2032. The AI-enabled eCommerce solutions market alone is predicted to reach \$16.79 billion by 2030. This growth is fueled by the increasing reliance on AI for enhancing and streamlining e-commerce operations.

## Supporting Thoughts



- The AI in eCommerce market size is poised for appreciable growth due to the rising demand for predicting shopping patterns and providing personalized customer experiences.
- AI technologies like natural language processing (NLP), machine learning, and deep learning are becoming integral to e-commerce for tasks such as smart search, sentiment analysis, and product categorization.
- Warehouse automation, powered by AI, is set to experience considerable growth, with intelligent robots and IoT sensors streamlining inventory management and boosting productivity.
- Cloud-based AI deployment is expected to capture a significant market share, offering scalability and real-time data analytics for predictive forecasting and personalized customer experiences.

[Grand View Research]



AI-ENABLED E-COMMERCE SOLUTIONS MARKET VALUE

THIS GRAPH SHOWS THE MARKET VALUE STARTING AT \$3.71 BILLION IN 2021 AND REACHING \$16.8 BILLION BY 2030

**PROJECTED  
CAGR OF  
15.7% FROM  
2021 TO  
2030**

## Complexity in Code and Systems

Maru AI offers solutions for managing the increasing complexity in code and systems. By automating tasks and providing support in understanding complex code environments, Maru AI could aid in reducing the time engineers spend on such tasks, thereby tackling the challenge of growing code complexity.

## E-commerce Growth and AI Integration

Maru AI's platform is designed to support eCommerce focused engineering teams, addressing the growing integration of eCommerce in businesses. Its AI-driven solutions, including natural language processing for query handling and system learning, can enhance customer experiences and streamline eCommerce operations, aligning with the industry's shift towards AI integration.

## Engineering Talent Gap

Given the reliance on lead engineers in project teams and the aging workforce in the tech industry, Maru AI's ability to automate engineering tasks and provide immediate answers to complex queries can help mitigate the engineering talent gap. This approach aligns with the need for more efficient use of available human resources and reducing over-dependency on specialized skills.

**Our Solutions**

**75%**

of companies across the globe will have ecommerce in their business within the next 5 years.

- World economic forum

**80%**

of Engineers time is spent searching, understanding historical information, and answering questions.

- Global Time Code Report, Software.com

**5 X**

is the average annual growth rate for code size and complexity.

- The Software Report, [TheSoftwareReport.com](http://TheSoftwareReport.com)

**66%**

of projects end in partial or total failure.

-Standish Group's Annual CHAOS report 2020



# Embark on a Transformative Journey with Maru AI

Discover the potential of Maru AI! Visit [maru.ai](https://maru.ai) or connect with our CEO, Farah, for personalized insights into our innovative solutions.