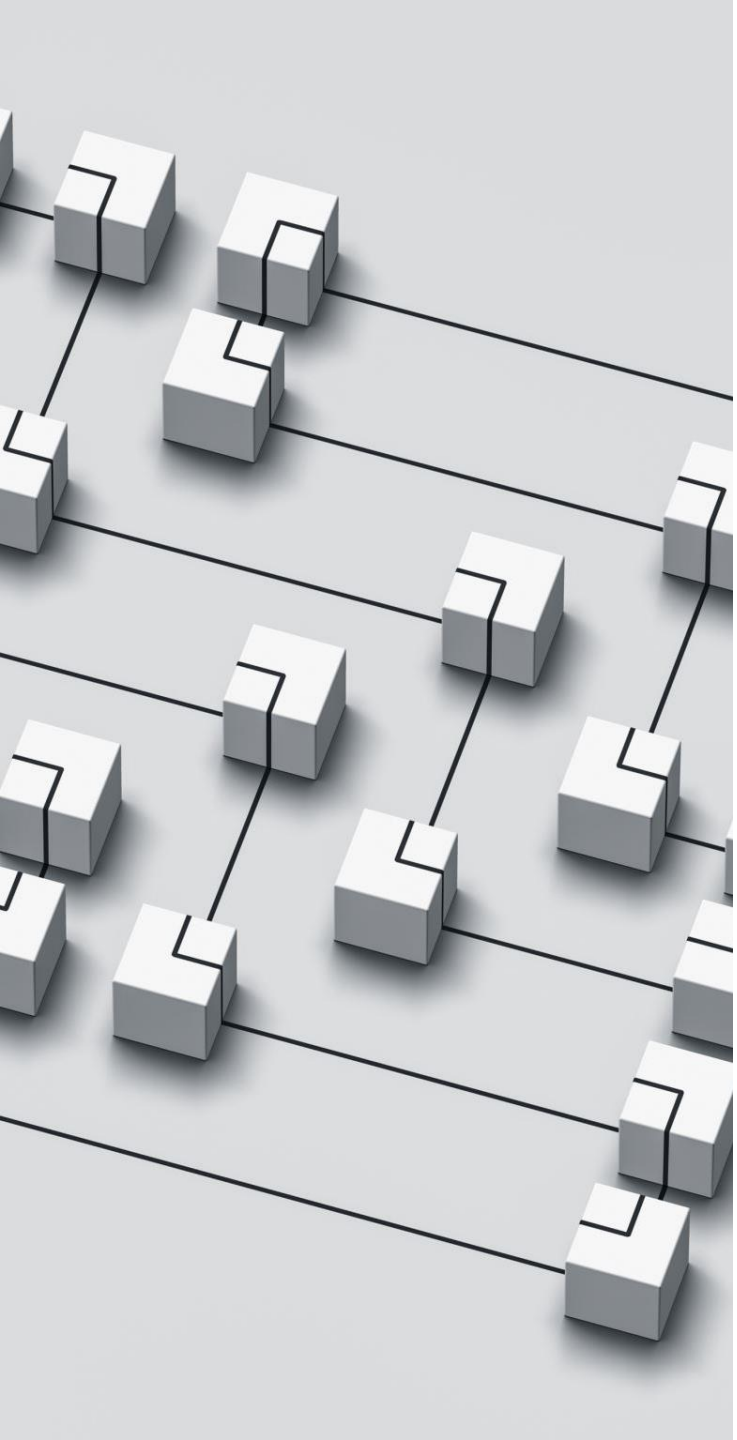
ALGOSPHERE: AI VISUALIZER & DEBUGGER

INTRODUCTION

- Welcome to AlgoSphere: A platform to visualize and understand Data Structures & Algorithms (DSA) through interactive learning and AI-powered debugging.

INSPIRATION BEHIND ALGOSPHERE

- Many learners struggle with traditional methods of learning DSA. Textbooks and static diagrams don't provide the interactivity needed. AlgoSphere aims to make learning engaging and efficient.



WHAT IS ALGOSPHERE?

- AlgoSphere allows users to visualize algorithms in real time, get step-by-step explanations, debug code with AI, and follow personalized learning paths for DSA mastery.

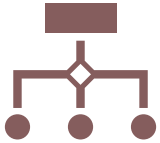
HOW IT WORKS

- Users can search algorithms, visualize step-by-step execution, interact with an AI chatbot for doubts, and even see real-time code debugging insights.

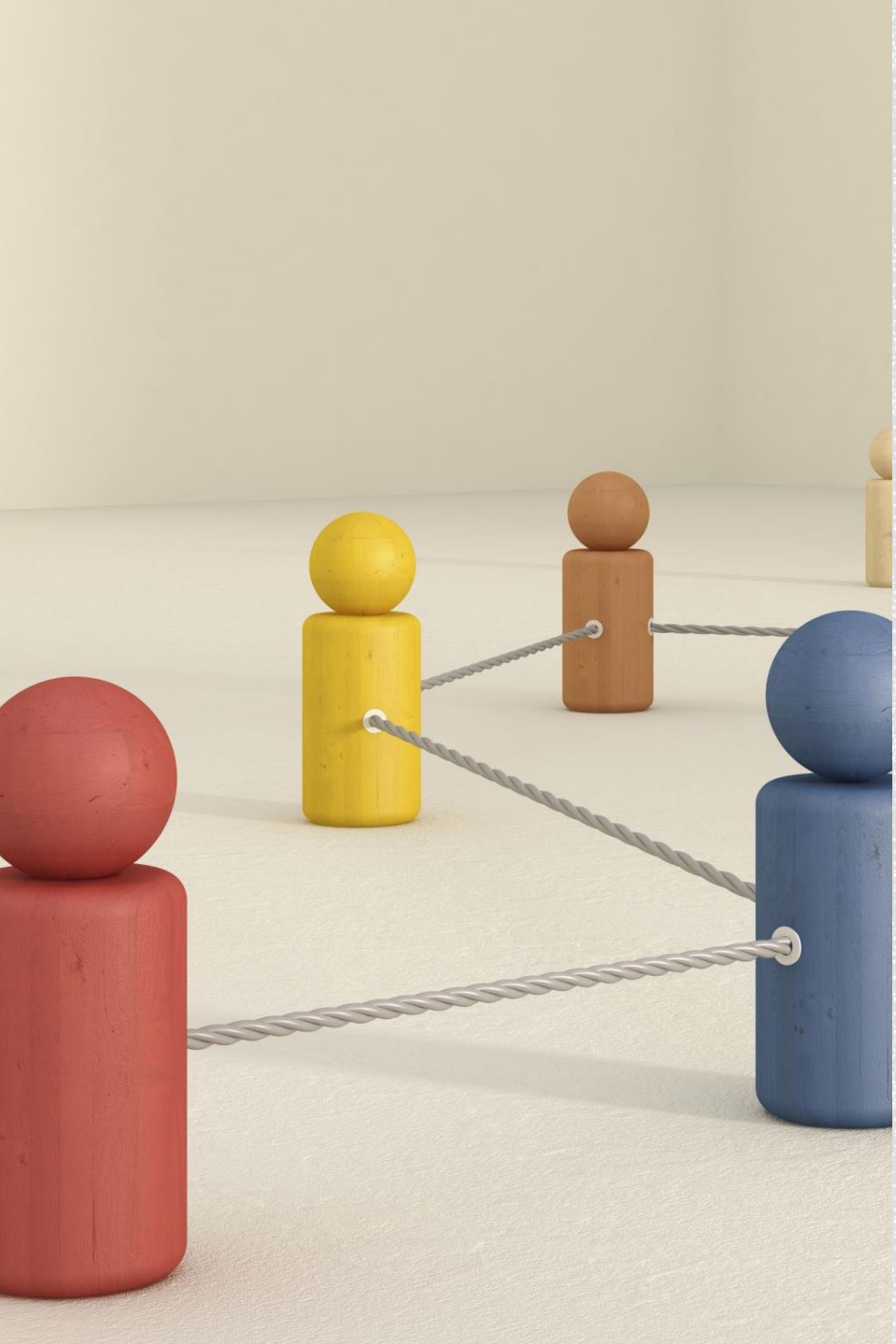
HOW WE BUILT IT

Frontend: React.js for interactivity and responsiveness

Visualization: D3.js for step-by-step animation of algorithms



Backend: Node.js to manage input and OpenAI API integration for debugging.



CHALLENGES FACED

- We faced challenges in visualizing complex algorithms while keeping performance smooth, and ensuring the AI debugger provided useful, actionable feedback without overwhelming users.

ACCOMPLISHMENTS

- We successfully created a platform that merges learning and debugging, particularly proud of the real-time AI debugger offering insights on code.

LESSONS LEARNED

- We learned how to optimize performance for real-time visualization and gained valuable experience in creating intuitive UIs and integrating AI for educational purposes.

WHAT'S NEXT FOR ALGOSPHERE

- Next steps include expanding the algorithm library, adding personalized progress tracking, enhancing the AI debugger with more languages and deeper analysis capabilities.

TECHNOLOGIES USED

D3.js for visualizations

Node.js for backend

React for frontend

OpenAI for AI-powered debugging.

THANK YOU FOR EXPLORING ALGOSPHERE!

We hope you've enjoyed visualizing, debugging, and mastering the art of algorithms with us!