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Data Structures and Algorithm Visualizer

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Abstract: *This paper presents an interactive web-based Data Structures and Algorithms (DSA) Visualizer designed to bridge the gap between theoretical understanding and practical implementation. The platform offers real-time visualizations of core data structures and algorithmic operations, enabling learners to observe step-by-step execution of concepts such as sorting, searching, and array manipulation. Beyond basic visualization, the tool integrates user login and profile tracking, allowing individuals to monitor their progress, solve coding challenges, and view personal metrics including score, rank, and completed paths. By combining educational animations with interactive learning and performance analytics, this system enhances engagement and improves comprehension, serving as an effective learning aid for students, educators, and self-learners..*

Keywords: Data Structures, Algorithms, Visualization, Educational Tool, Web Application, React, Sorting, Searching, Interactive Learning

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