See, Learn, Code: Elevating Data Structures and Algorithms with Videos

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In response to the dynamic landscape of computer science education, this study presents an innovative approach that harnesses instructional videos to enhance the comprehension and practical application of data structures and algorithms. As foundational components of algorithmic thinking and problem-solving, algorithms and data structures necessitate a versatile approach catering to diverse learning styles. This pedagogical strategy seamlessly integrates instructional videos into a university-level course dedicated to data structures and algorithms.

This methodology involves meticulously crafted videos designed to demystify intricate concepts and processes. Through visual examples, interactive explanations, and real-world demonstrations, these videos bridge the gap between the abstract nature of algorithms and data structures and their practical applications. The "See" element enables students to observe algorithms in action, "Learn" immerses them in engaging demonstrations, and "Code" invites active participation, intertwining theoretical comprehension with hands-on practice.

Central to this approach's impact is the inherent versatility of instructional videos. Beyond traditional teaching constraints, these videos provide students with the flexibility to rewatch, slow down, or accelerate their learning journey. This adaptability proves particularly potent in the realm of data structures and algorithms, where intricate concepts often require repeated exposure. By facilitating the revision of challenging segments and allowing learners to review materials at their preferred pace, this approach cultivates a deeper understanding. Additionally, advanced learners benefit from accelerated content consumption, while the on-demand accessibility of videos seamlessly integrates learning into students' routines, fostering continuous and enduring comprehension of complex subjects.

This innovative educational approach not only addresses the evolving needs of computer science education but also empowers students with a versatile tool for lifelong learning and mastery.

Keywords: algorithms, data structures, visual learning, hands-on practice, multimedia learning

References

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