

Exploring Visualisation and Game-Based Learning tools for teaching Data Structures and Algorithms

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Literature Review Seminar

Why DSA?

Data Structures and Algorithms are an essential topic in Computer Science-related fields, and form the foundation of many higher-level concepts in CS.

DSA Curriculum

The ACM CS2013 provides guidelines on subjects that should be taught in an undergrad CS course. Algorithms & Complexity is identified as a core Knowledge Area and within that the knowledge unit of Fundamental Data Structures and Algorithms.

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Our Implementation

We will focus on teaching Fundamental DSA for the purposes of the tool we intend to develop.

Fundamental DSA in ACM CS2013

- ▶ Simple Numeric Algorithms
- ▶ Sequential and Binary Search
- ▶ Quadratic and $\Omega(n \log(n))$ sorting algorithms
- ▶ Hash tables and collisions
- ▶ Binary search trees
- ▶ Graphs and common graph algorithms
- ▶ Heaps
- ▶ Pattern matching/string algorithms

Algorithm Visualisation

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Game-based Learning

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