Electronic Teaching of Algorithms

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Project Overview

Our tool will help students understand some graph traversal algorithms taught in Drexel’s data structures courses via implementation and visualization.

Users will write code to implement the algorithms and see the visualized results.

- **Search**: Depth-first and Breadth-first
- **Shortest Path**: Dijkstra’s and Bellman-Ford
- **Minimum Spanning Trees**: Prim’s and Kruskal’s
Purpose

Can be difficult to understand algorithms with only code, visualizations make concepts easier to comprehend.

Gives the students the ability to implement algorithms and practice with code not just conceptually.

Saves TA’s time on grading through static code analysis and obvious visual feedback.
Mark Boady  Assistant Teaching Professor and Ph. D. Student

Students taking the course **CS 260 - Data Structures** or a course with similar content.
What we presented previously

Project setup as local program using Kivy

Graphics and code interpreting were ready

   Bugged during the live demo due to resolution
Changes in the last quarter

Completely new project architecture

Now a web app on flask, python backend, nodejs

Lowered scope to ensure minimal viable product

Only one type of problem implemented

No new visuals
Difficulties we faced

- Team restructuring
  - Happened two weeks after new development cycle started, critical timing

- Our management software locked us out
  - Couldn’t even check the tasks we had set up

- Time schedule was much tighter since we needed to spend more time on development
  - Not as much time for testing and polishing
Testing

Static Code Analysis

- Tedious, easy to setup but Flask renders many false positives due to project structure

Test Cases

- Web system creates new challenges
Demo
Thanks!