Jarrale Butts

Southern New Hampshire University

Enhancement Two Narrative: Algorithms and Data Structure

What is the Artifact:

The artifact is a full-stack web application built using the MERN stack (MongoDB, Express.js, React, Node.js). It evolved from an initial Jupyter dashboard, created in February 2024. The dashboard displayed data about animals in a tabular format, with additional features such as a map and pie chart. I enhanced the artifact by transforming it into a full-stack web app with a user-friendly GUI, including React Bootstrap Cards for displaying animal information, and a login and search feature.

Why Include in ePortfolio:

The artifact is included in my ePortfolio because it demonstrates my ability to evolve a project from a simple data visualization tool to a fully functional web application. The inclusion of the algorithms and data structure enhancement of the updated custom pagination component and new search feature showcases my skills in programming languages and algorithmic efficiency. The artifact was improved by allowing users to search for animal breeds providing a more user-friendly experience. In addition to the custom pagination algorithm displaying a limited range of page numbers, allowing users to jump directly to specific pages, and tailoring the pagination based on user role and search keywords.

Course Outcomes:

The enhancement of my Animal Shelter Dashboard in the Algorithms and Data Structure category has successfully achieved course outcome three. I have successfully included a search feature allowing users to search for animals by breed, as well as incorporating a custom

pagination component, thus designing and evaluating computing solutions that solve a given problem using algorithmic principles and computer science practices and standards appropriate to its solution, while managing the trade-offs involved in design choices (data structures and algorithms). My outcome coverage plans remain the same and are on track.

Reflect:

The enhancement of the search feature was my main concern because the original artifact didn't offer the option, and I thought it would provide a much better user experience. The search algorithm initializes the keyword from the URL if present and updates it based on user input. When submitting, if a keyword exists, it trims the input, redirects to the search results, and clears the field. If no keyword is provided, the user is redirected to the homepage. The original artifact included a simple pagination component called native pagination, which can be easily included in a Dash project and allows for paging through one or all pages. My pagination algorithm displays a maximum of 6-page numbers at a time, dynamically calculating the start and end pages based on the current page, allowing users more freedom when selecting a page to jump to. The biggest challenge came in the form of adding the pagination component to the various screens of the project, such as the home screen, animal detail screen, and admin animal shelter list.