Eco-Friend: Data-Drive Environment Protection with React Native Implementation

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Project Objective

The objective of this project is to implement an environment protection platform with React Native. Datasets from publicly available sources are used and users would be able to add their own data entries, collectively forming a more comprehensive database. Users will be able to create and join teams and events and share their activities and pictures on social medias in the aim of creating an interactive and engaging experience, making environment protection an interesting option for friend gathering. Server optimizations were implemented with NGINX load balancer and an automated data pipeline for data processing and regular update of datasets.

Overall System Architecture

Data Engineering and Dataset Update

The raw format of datasets from different data sources includes comma separated values (CSV), JSON and KML/KMZ formats. In order to achieve the fastest processing speed of our data pipeline, all formats are converted to csv formats.

In order to keep datasets updated and our application relevant, datasets stored in central MongoDB database are updated on a predefined basis. Update process is streamlined as only new entries are updated or outdated entries deleted, with majority of data unchanged.

Front-end User Interface

Django + NGINX Server Performance Testing

<table>
<thead>
<tr>
<th>Technology Suite</th>
<th>Max Concurrent User</th>
<th>Average Response Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Django + NGINX</td>
<td>50</td>
<td>89 ms</td>
</tr>
<tr>
<td>Django</td>
<td>680</td>
<td>99 ms</td>
</tr>
</tbody>
</table>

Server Performance Improvement Result

References
