INTELLIGENT REVIEW SYSTEM

BACK END TEAM:
ANTONIO GONCALVES
PETER NGUYEN
WINAGODWIN ANYANWU JR.

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Introductions

- Antonio Gonclaves
  - 4th Year Mechanical Engineering Major, CS Minor, Finance Certificate
  - Experience: Java, Python, MatLab
- Peter Nguyen
  - 3rd Year Computer Engineering Major
  - Experience: C/C++,Python(scikit-learn machine learning algorithms), Matlab
- Winagodwin Anyanwu Jr.
  - 3rd Year Computer Science Major
  - Experience: Java, C, Android, Python

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OBJECTIVE

CREATE A PLATFORM FOR TA'S TO IDENTIFY AND REVIEW TOPICS THAT STUDENTS ARE STRUGGLING WITH THE MOST.

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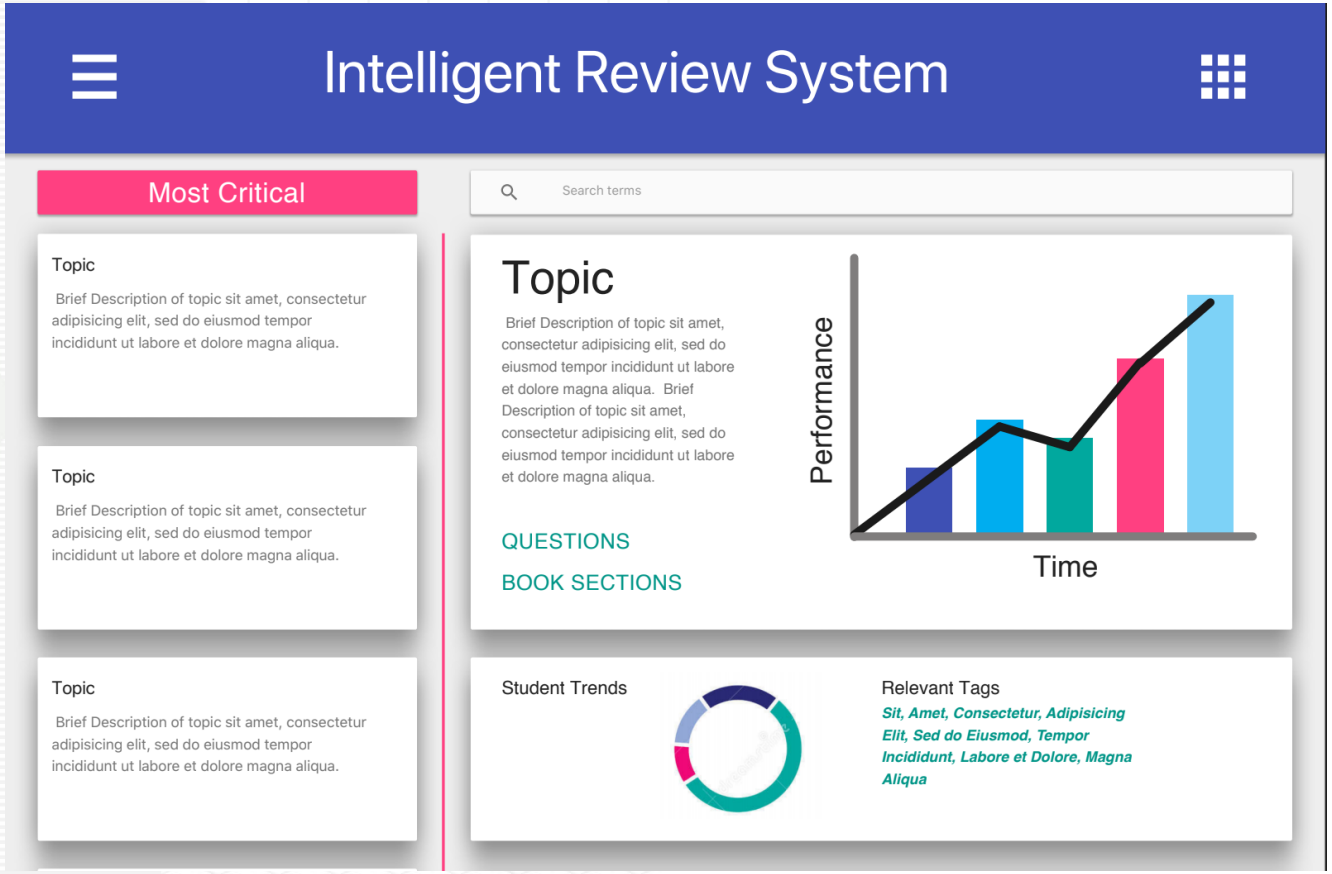
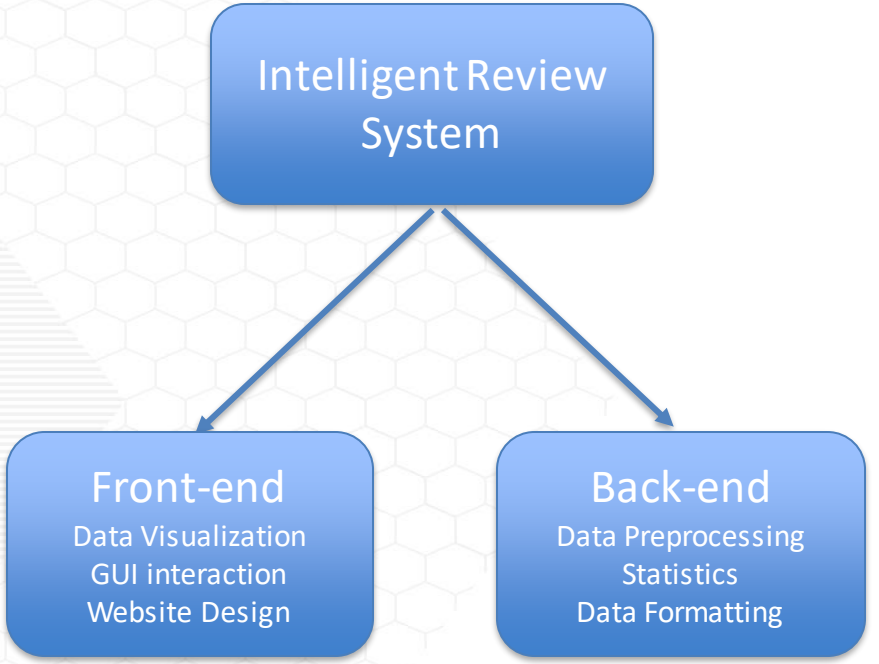
Overview

- Approach
- Setup
- Research and Process
- Linkage
- Future Implementations
- What we have learned



Approach

- Add direct linkage from the database to front-end.
- Research on past projects.
- The back-end team used Python to mine data.
- Back-end produce usable json files for the front-end team.

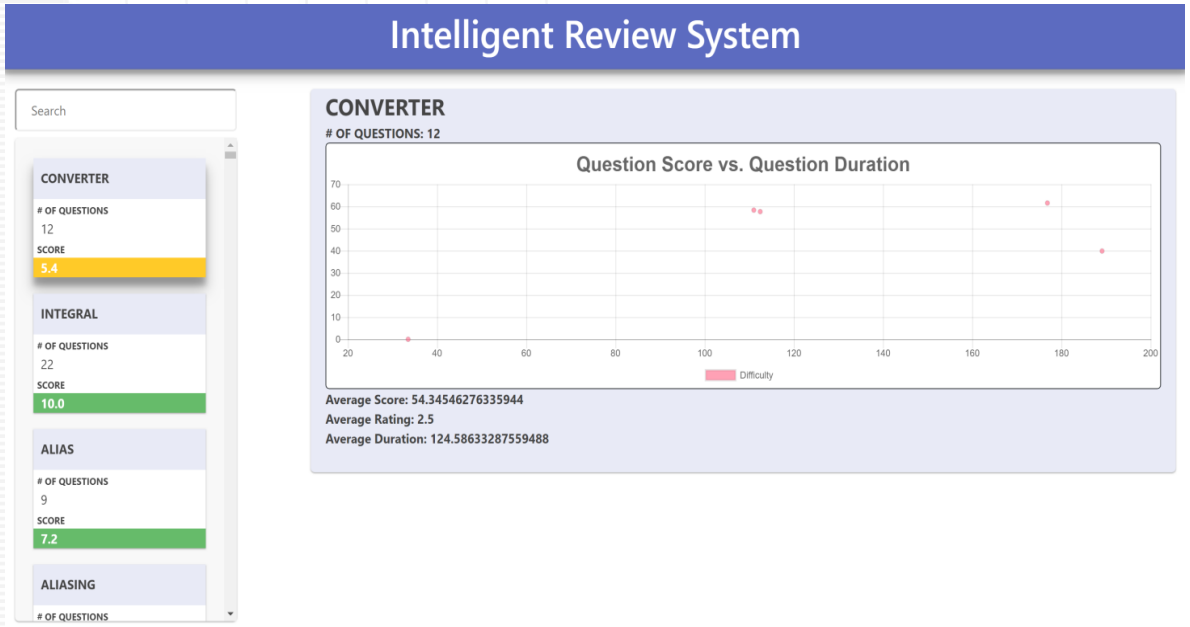


Infrastructure Setup

- Initially looked at past resources from ITS.
  - Problematic due to outdated virtual machines and documentation.
- Ultimately, setup our own virtual machine which proved lengthy.
  - Every step along the process had its own problem.

Process

- The team was able to successfully send data from the database to the front-end.
- The website can display a variety of statistics.



Linkage

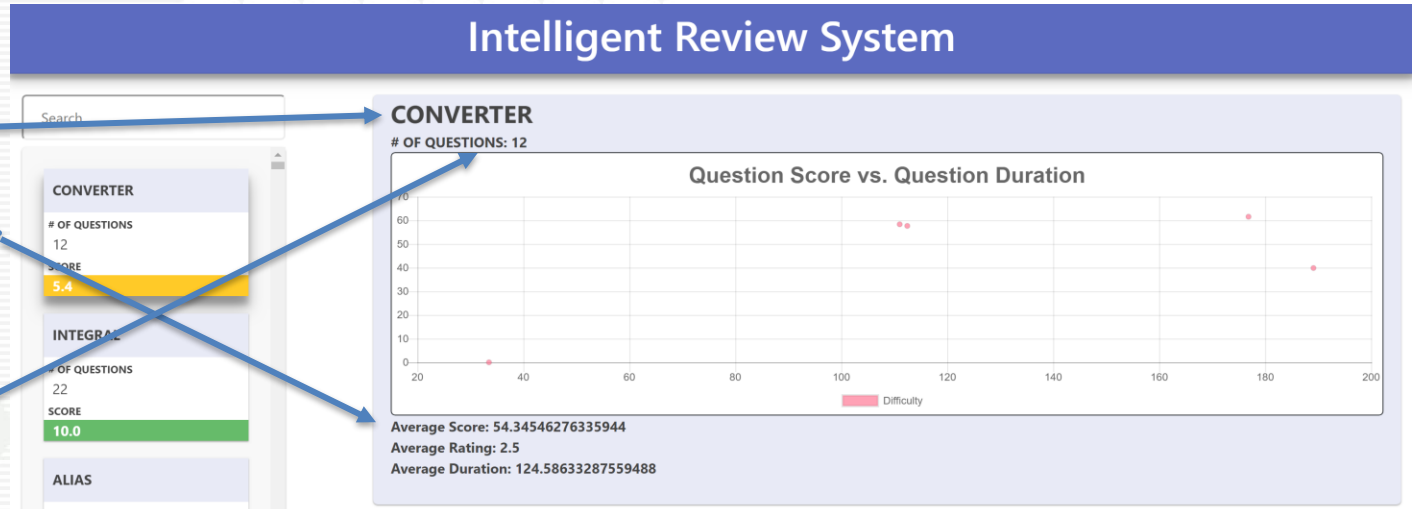
```
mysql> SELECT * from stats_3503;
+-----+-------------+------------+-----------------+----------+--------+--------+---------+------+-----------+----------+----------+
| id  | question_id | concept_id | current_chapter | answered | score  | rating | comment | tags | epochtime | duration | event    |
+-----+-------------+------------+-----------------+----------+--------+--------+---------+------+-----------+----------+----------+
|   1 |         385 |       NULL |               3 | D        |    100 |      2 | NULL    | NULL | 1453788828 |      197 | chapter  |
|   2 |         653 |       NULL |               3 | B        |      0 |      4 | NULL    | NULL | 1453789042 |      240 | chapter  |
|   3 |        3543 |       NULL |               3 | NULL     |   NULL |   NULL | NULL    | NULL | 1453789322 |     NULL | equation |
|   4 |        3543 |       NULL |               3 | NULL     |   NULL |   NULL | NULL    | NULL | 1453789326 |     NULL | equation |
```

```python
def getUserData(connectx, user_id_list):

    stat_cursor = connectx.cursor(buffered=True)
    user_dict = {}

    for user_id  in user_id_list:
        user_dict[user_id] = []
        try:
            stats_query = ("SELECT * FROM stats_{0:d} WHERE score IS NOT NULL".format(user_id))
            stat_cursor.execute(stats_query)
            for stat in stat_cursor:
                question_id = stat[1]
                score = stat[5]
                timestamp = stat[9]
                assignment = stat[3]
                duration = stat[10];
                rating = stat[6]
                if type(assignment) != int:
                  assignment = 0
                user_dict[user_id].append( {'q_id':question_id, 'score':score, 'ts':timestamp,
                 'assignment':assignment, 'duration':duration, 'rating':rating} )
        except:
            print("Table for user {0:d} does not exist".format(user_id))

    stat_cursor.close()
    return user_dict
```

```
"['AM']":[
  3428,
  3327,
  3303,
  867,
  349,
  414,
  241,
  517
],
"['ASCII']":[
  55
],
"['BIBO']":[
  2165,
  3217,
  3283
],
"['Blackman']":[
  206,
  207,
  208,
  209,
  767
],
"['C-to-D']":[
  3315,
  3314
],
"['D-to-A']":[
  1051,
  278,
  217,
  9,
  5
].
```

Linkage (continued)


```
{
  "Topics": [
    {
      "name": "converter",
      "Average Score": 54.34546276335944,
      "Average Rating": 2.5,
      "Average Duration": 124.58633287559488,
      "difficulty": null,
      "questions": [
        505,
        3435,
        3370,
        3366,
        3360,
        3315,
        3387,
        1205,
        1084,
        775,
        676,
        3314
      ]
    },
```

Future Implementations

- Machine Learning implementation
- Automatic updates
- Future VIP teams would be able to use our code to continue

What We Learned

- Virtual Machine Setup
- Python and SQL connections
- Data processing
- Formatting Data

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FRONT-END TEAM:
NEAL KURANDE
LUCAS PHILLIPS

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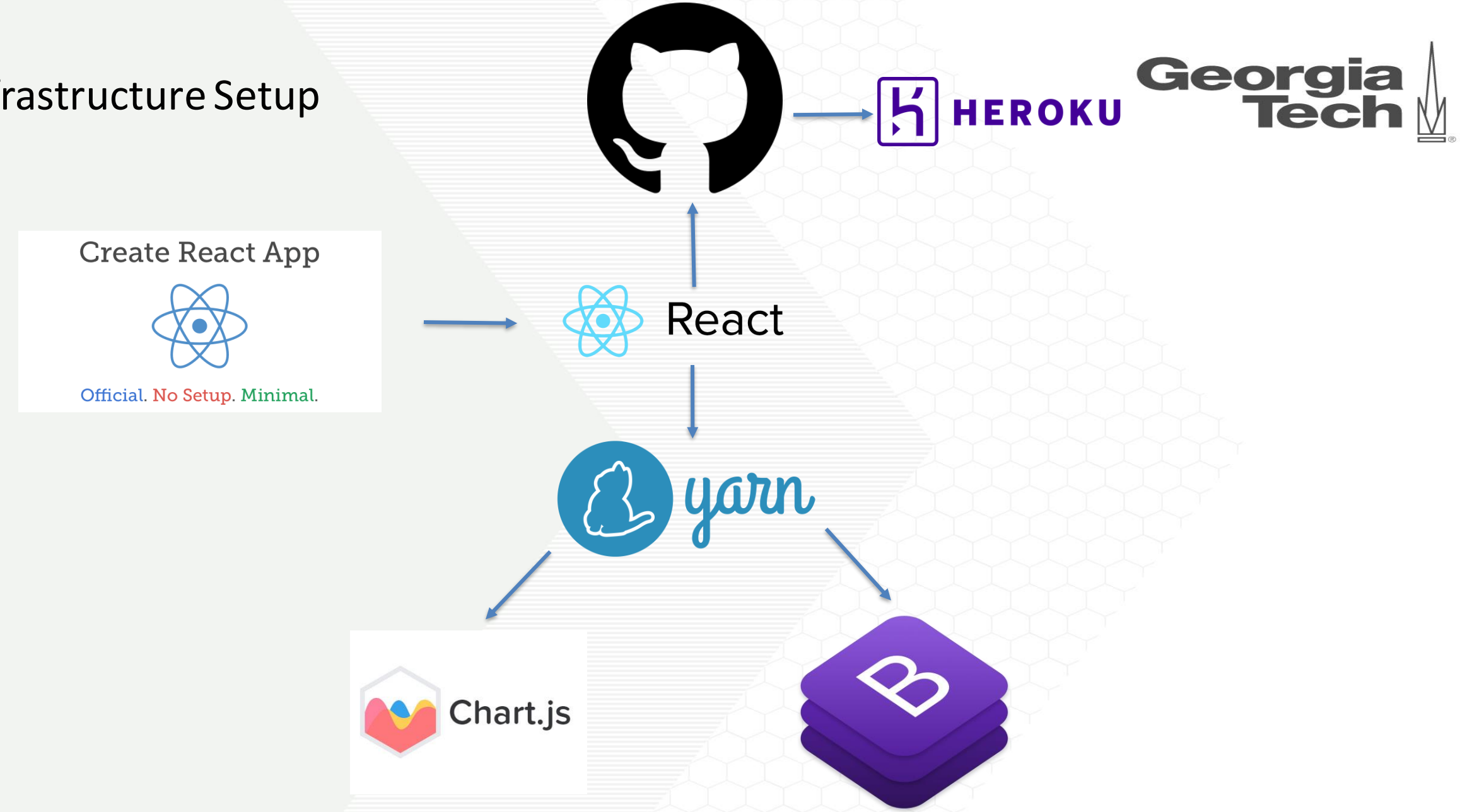
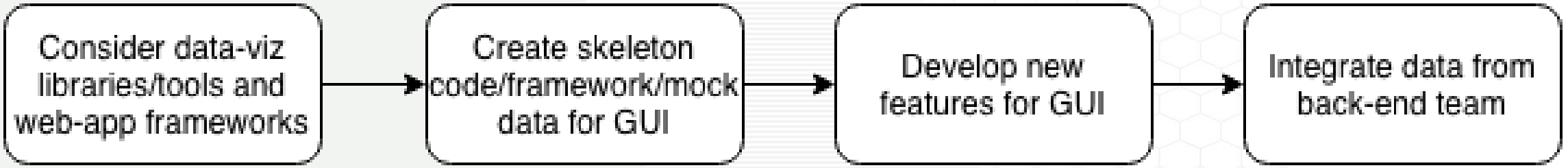
Introductions

- Neal Kurande
  - 3rd year Computer Engineer
  - Experience: C/C++, Python, Java, JavaScript, MATLAB
- Lucas Phillips
  - 5th year CS major (Spanish minor)
  - Experience: HTML/CSS, JavaScript, ReactJS/React-native, node, PHP, MySQL, Python, Java, C, Assembly

Infrastructure Setup

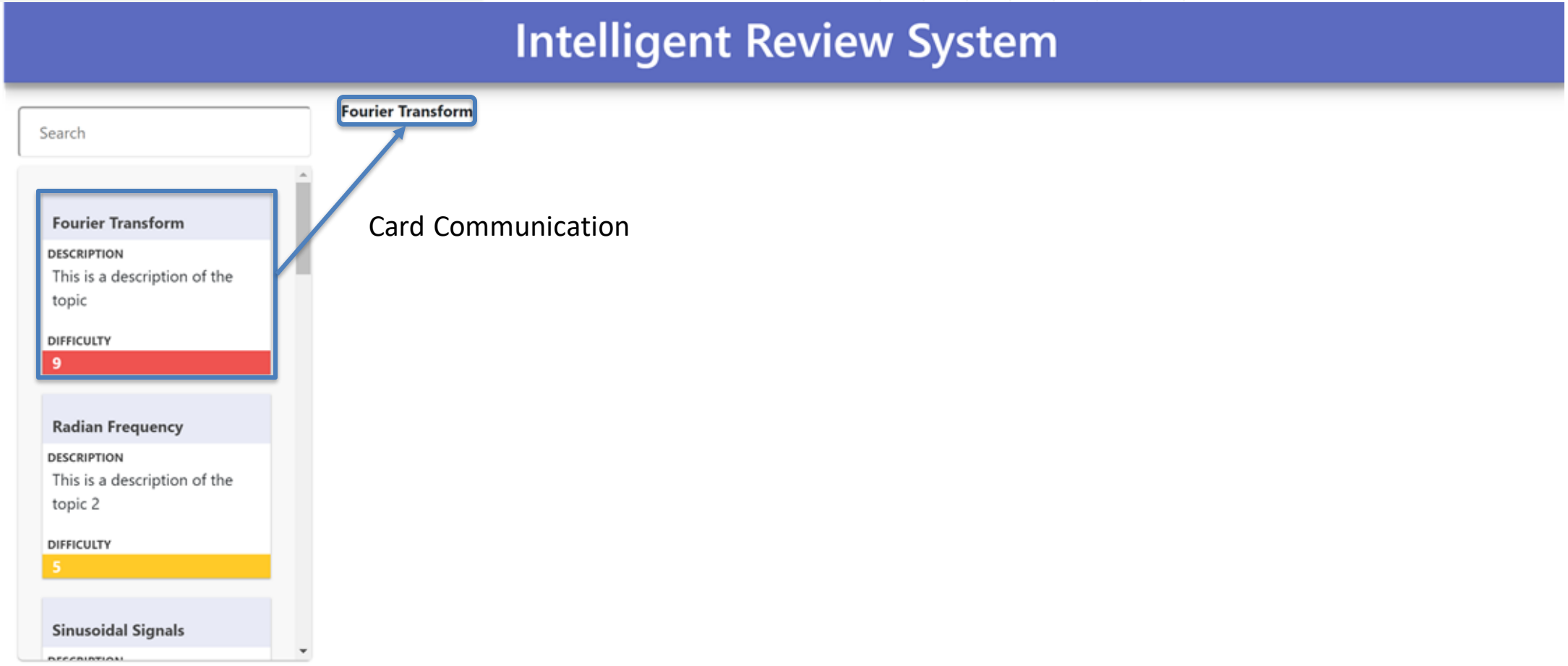


Approach


Consider data-viz libraries/tools and web-app frameworks
Create skeleton code/framework/mock data for GUI
Develop new features for GUI
Integrate data from back-end team

Initial Setup

Card Communication



Search Functionality

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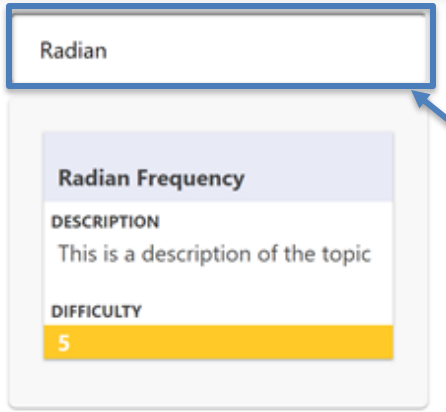

Radian Frequency

Search bar filters to the right topic

```
15    handleChange(event) {
16      let query = event.target.value.toLowerCase();
17      let displayedTopics = this.props.data.topics.filter((t) => {
18        let searchValue = t.name.toLowerCase();
19        return searchValue.indexOf(query) !== -1;
20        })
21
22      this.setState({topics: displayedTopics});
23    }
```

Chart Linkage with Chart.js

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Search

Fourier Transform
DESCRIPTION
This is a description of the topic
DIFFICULTY
9

Radian Frequency
DESCRIPTION
This is a description of the topic
DIFFICULTY
5

Sinusoidal Signals
DESCRIPTION
This is a description of the topic
DIFFICULTY

Fourier Transform

# of Questions: 5


```
import React, {Component} from 'react';
import { Bar, Scatter } from 'react-chartjs-2';

class Chart extends Component{
  constructor(props){
    super(props);
    this.state = {
      chartData:props.chartData
    }
  }
```

GUI Linked to Real Data

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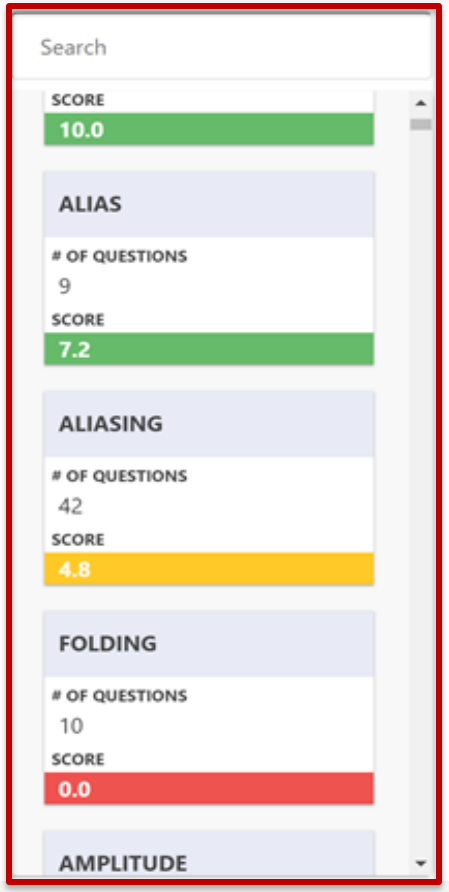

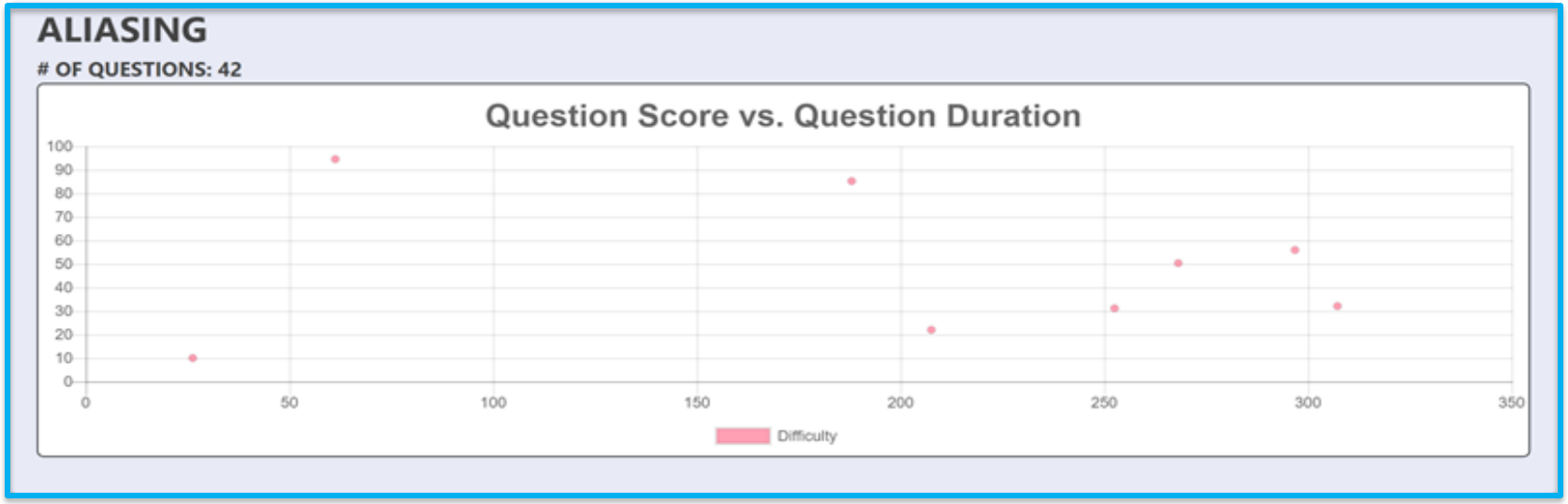


```
render() {
  return (
    <div className="App">
      <Header className="header"/>
      <div className="container-fluid">
        <div className="row">
          <div className="col-sm-3">
            <TopicList className="topic-list" data={data} changeTopic={this.changeTopic}/>
          </div>
          <div className="col-lg-9">
            <TopicInfo className="topicInfo" topic={this.state.currentTopic}/>
          </div>
```

Next Steps

- Filter(s)
- Realtime integration with back-end
- Compare/more information

Link to Demo

https://intelligent-review-system.herokuapp.com

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QUESTIONS?

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