

# DigiClips (sdmay23\_03)

December 8th 2022

## Team members:

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**Client:** DigiClips

**Advisor:** Ashfaq Khokhar

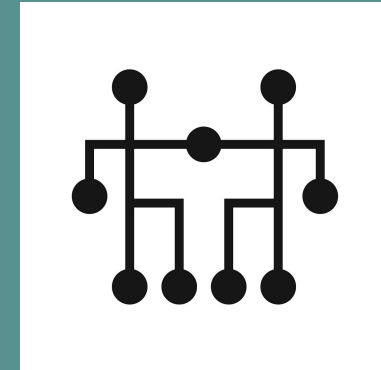
# Project Context

Our client, DigiClips, is a small media monitoring company

Their users will use a search engine to query their presence on different media platforms, including television, radio, online newspapers, magazines, websites, blogs and social media.

Our team has been tasked with creating functional automated email reports from media hits found by a client's search query.

- Automated Email Reports
- Graphical Representations of Analyzed Data
- Options and Help Pages



# Problem Statement

How might we create automated email reports displaying meaningful hit data for DigiClips clients so that they can gain insights of the scale and impact of their media presence?



# User Needs

## Automated Emails must:

- Be sent at customizable time intervals
- Contain hit metrics relevant to user needs
- Use only comprehensive and meaningful data
- Be cancellable

## Graphical Representation must:

- Be comprehensive
- Contain accurate information
- Work properly in email format
- Be relevant to user's expectation



# Search Engine Requirements

Search Engine takes a search query, and scans a database filled with media recorded and stored by DigiClips

- What are we specifically implementing?
  - Options Page
    - Clients of DigiClips can narrow their search by listing preferences in the Options Page
  - Help Page
    - Develop a help section which allows customers to
      - Ask Questions
      - Give Suggestions
      - Fill Surveys



# Automated Email Reporting Requirements

- Collect new media information regarding client's search request
- Create an automated feature which send emails to clients
- Organize media found by different criteria
  - Articles, Journals, Videos, Radio, Websites, Podcasts
- Develop a more user-friendly report
  - Help Functionality which allows client to understand, and navigate through results



Duke Shelley Jr, CEO  
Iowa State University Golf Club  
Jack Clubhouse  
2001 Veenker Dr  
Ames, IA 50011

Display duration (daily,  
weekly, monthly)

Dear Mr. Shelley,

This email serves as your daily [set duration] report alert on the data retrieved through search queries from 12/07/2022 – 12/08/2022.

Search range  
from last report  
date - present  
day

The DigiClips Search Engine was able to collect over 57 hits, with 52 positive, 5 neutral, and 0 negative searches.

Media Type	Number of Hits
Articles	28
Videos	5
Websites	14
Radio Stations	10
Podcasts	0

Hits categorized by  
media type

Here are the 5 most popular sources for each media type

Articles	Videos	Websites	Radio Stations	Podcasts
<a href="#">Article 1</a>	<a href="#">Video 1</a>	<a href="#">Website 1</a>	<a href="#">Radio 1</a>	N/A
<a href="#">Article 2</a>	<a href="#">Video 2</a>	<a href="#">Website 2</a>	<a href="#">Radio 2</a>	N/A
<a href="#">Article 3</a>	<a href="#">Video 3</a>	<a href="#">Website 3</a>	<a href="#">Radio 3</a>	N/A
<a href="#">Article 4</a>	<a href="#">Video 4</a>	<a href="#">Website 4</a>	<a href="#">Radio 4</a>	N/A
<a href="#">Article 5</a>	<a href="#">Video 5</a>	<a href="#">Website 5</a>	<a href="#">Radio 5</a>	N/A

Links to  
sources of  
media

N/A – The DigiClips Search Engine was unable to find a hit on the given media type

For more information on the sources for each hit, please click on the [Graphical\\_AnalysisPDF](#)

Graphical  
Representation of  
Data report

Sincerely,

Doc Robinson

# Graphical Representation of Data Requirements

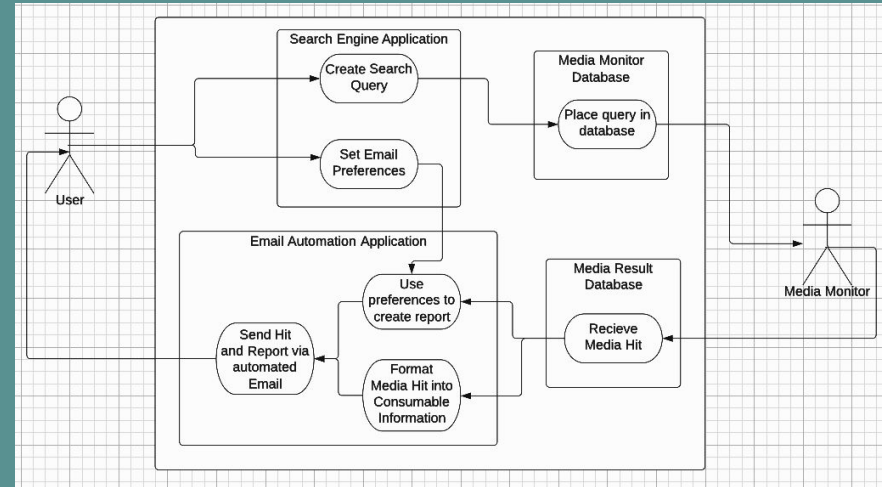
- Collect all media based on the client's search request
- Sort data based on four categories
  - Total Number of Search Hits
  - Media Connotation (Positive, Negative, Neutral)
  - Viewership Numbers
  - Length of Media





# Conceptual Design Overview

- Search engine -> Search query and email preferences
- Queries are sent to media monitoring database
- Queries matches returned to media result database as a “Media hit”
- Generating automatic email reports
- Automated email reports will be sent to the respective user
- Cycle of processing queries will continuously generate every query on the search engine



# Detailed Design

**Our design is based off on the DigiClips Search Engine Application.**

Our entire design acts as a loop.

Purpose: To provide clients with important information about them regarding the media outlets

Advantage: To allow the clients to realize how certain products, practises, or services are being perceived in the world.

## Thorough Description:

Objective - To capture necessary processing in one single application to ensure that the search engine is receiving and storing the search queries

- To create this application - increase the efficiency and productivity of the result hits and the creation of user-friendly application

## Software Components:

- AngularJS
- MySQL Database
- Backend (C)
- Python
- TypeScript
- AWS
- Cypress
- Protractor
- Charts.js
- MonkeyLearn

# Implementation: Search Engine Application

## Overview

The search engine is a web application in which the user will interact with. The user is able to search for a specific query and set their email preferences. The application is written in TypeScript and runs on AWS (Amazon Web Services).

**Create Search Query:** The user will use this to search a specific topic for the media monitor to listen for. This query will be sent to the media monitor database.

**Set Email Preferences:** The user will be able to select various options pertaining to emails containing the results of their search query. This includes the frequency in which emails are sent and different details to be contained within the reports.

**These preferences will be placed in a mySQL database:**

### 1) Frequency Options:

- Receive email once a day.
- Receive email once a week.

### 2) Report Detail Options:

- Include full media hits
- Choose type of media to monitor
- Include media statistics
- Include media connotation (positive, negative, or neutral)
- Include how many times the query was mentioned over a given time period

# Implementation: Email Automation Application

This application will run once every 24 hours to send emails requested by digiclips clients. It will be written in TypeScript and run on AWS.

**Report Creation:** Based on what the user selected in their preferences, a custom report will be created detailing hit information.

**Media Hit Format:** The result of the media search will be put into a consumable format. The result will include context before and after the query was found.

**Sending the Email:** After all formatting is complete, the user will receive an email based on their set preferences.



# Risks/Challenges and Mitigation

## Automated Email Reporting

- Format accuracy of Emails
- Misidentification of words or phrases
- Display errors

**Mitigation:** Compare our system's output with a standardized output. This will give us a better look at how effective our automated email report system is, as the graphics may not be displayed efficiently.

## Graphical Representation of Data

- Conflicting/Incompatible interface with DigiClip databases
- Inaccurate graphics or analytics

**Mitigation:** Simply get familiar with the material. It was necessary to familiarize ourselves with the database structure and how information is acquired from the media to be converted into graphical representations.

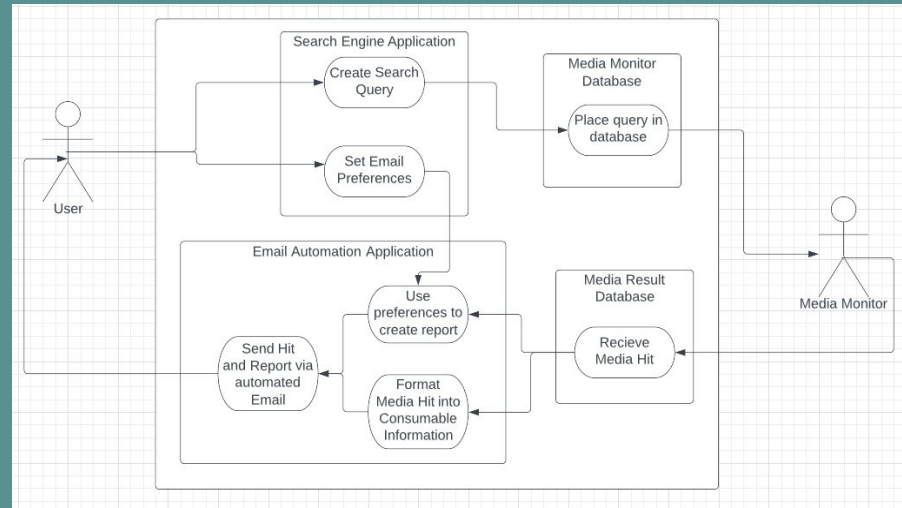
# Testing Plan

## Unit Testing

- Jest- a Javascript Testing Framework with a focus on simplicity
- Cypress- a modern web automation test framework designed to simplify browser testing
- Protractor- an open-source automation testing framework
- HTTP requests - requests sent to the server to get a specific response

## Interface Testing

- API testing using HTTP requests with various input parameters
- Verify the accuracy of the stored captured data in the database and the functionality of the features



## Integration Testing

- User can search within the search engine and set preferences
- Search engine can send search queries to database and send email preferences to email alert system
- Email alert system can access the database, receive search data, and sends an accurate report

## System Testing

- Focus will be set on the users' interaction with the system itself using Protractor
- The nature of user interaction may require us to have some test users that can give us feedback on the user experience and related ideas

## Regression Testing

- Identify breaks in the code whenever new integrations are introduced
- Cypress will allow us to write functional visual tests

## Acceptance Testing

- Our four requirements: Search Engine Application, Media Monitor Database, Email Automation, Media Result Database
- Functional and visual tests to show that we met the criteria for each of the requirements

## Security Testing

- Unit tests that aim to exploit these vulnerabilities
  - Use possible malicious statements in the search engine in attempt to gain access to unauthorized information
  - The use of viewing API result calls to get information that is not necessary

# Design Complexity

- **Design Challenges**

- Search Queries
  - Process for creating, and updating queries in an easy manner
- Effective ways to display client search requests
  - Observations -> Quantitative Results

- **Technical Challenges**

- Snip portions of media recordings that reflect client's search requests
  - Text Extraction Process
- Searching the internet to reflect client's search requests
  - Retrieving accurate information for reports





# Project Plan

- Project Management Style: Agile Software Development
  - Collaboration
  - Flexibility
- Current Progress
  - Understood project objectives and requirements
  - Developed a detailed design of our project
  - Created testing procedures that will be helpful for next semester



# Project Plan

- **Tasks in Graphical Representations of Data**

- Develop graphs specific to the clients request, based on data obtained from media segments
- Create a potential analytical report stating the trends that were found in the graphs
- Create Options Page with preferences to broaden, or narrow searches
- Testing

- **Tasks in Parsing Hit Data**

- Parse media text into usable format
- Parse media audio into usable format
- Testing

- **Tasks in Automation Email Reporting**

- Collect media information from search engine
- Automate Email Sending
- Sentiment Analysis on Positivity of Media
- Converting data found from the search engine, in a readable format to client
- Testing

# Project Plan

- Project Schedule for 2nd Semester

ID	Name	Jan, 2023			Feb, 2023				Mar, 2023				Apr, 2023				May, 2023		
		10 Jan	15 Jan	22 Jan	29 Jan	05 Feb	12 Feb	19 Feb	26 Feb	05 Mar	12 Mar	19 Mar	26 Mar	02 Apr	09 Apr	16 Apr	23 Apr	30 Apr	07 May
1	▼ Hit Data Parsing		[Grey bar from 15 Jan to 19 Feb]																
2	Parse text hits into usable format		[Blue bar from 15 Jan to 29 Jan]																
3	Parse Audio into usable format					[Blue bar from 05 Feb to 19 Feb]													
4	Data Parsing Testing		[Blue bar from 15 Jan to 19 Feb]																
5	▼ Email Automation							[Grey bar from 19 Feb to 05 Mar]											
6	Send emails to customer with hit data						[Blue bar from 19 Feb to 26 Feb]												
7	Automate sending the emails to customer								[Blue bar from 05 Mar to 12 Mar]										
10	Email Automation Testing						[Blue bar from 19 Feb to 05 Mar]												
11	Spring Break									[Blue bar from 12 Mar to 19 Mar]									
8	▼ Graphing hit data										[Grey bar from 19 Mar to 30 Apr]								
9	Create graphs with hit data										[Blue bar from 19 Mar to 02 Apr]								
12	Graph generation testing										[Blue bar from 19 Mar to 02 Apr]								
13	Create Details Page														[Blue bar from 16 Apr to 23 Apr]				
14	Details Page Testing													[Blue bar from 16 Apr to 23 Apr]					
15	Graphs displayed in emails																	[Blue bar from 30 Apr to 07 May]	

# Conclusion

Our team has worked closely with DigiClips for the past several weeks to develop plan to implement automated email reports and user friendly graphical representations of data. We have identified the criteria, designed the project, created a plan, and planned for testing.

Despite the server troubles DigiClips had on their end, we designed a project and now it is time to put that plan to action. After conducting thorough research and weekly meetings with DigiClips, we are confident in our ability to begin implementing all the work we prepared this semester.

Thank you!

**Questions?**

