



**The Faculty of Information and Communication Technology  
Mahidol University**

**Prototype IR System**

**Project Phase 2**

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## Introduction

The Haikyuu Character Search System, driven by the dynamic Elasticsearch and the efficient quicksort algorithm, has been meticulously crafted to cater to the needs of Haikyuu enthusiasts, ardent volleyball fans, and inquisitive minds across the globe. Its primary purpose is to provide a user-friendly and efficient means of accessing information about Haikyuu characters, allowing users to recall essential details about these characters even when their names escape memory. This comprehensive report embarks on an exploration of the technical intricacies and rich features embedded within the Haikyuu Character Search System. By unraveling how it functions and offering guidance on its usage, we aim to empower users to unlock the world of Haikyuu characters effortlessly and enhance their overall experience within the Haikyuu fandom.

## The problem that we are trying to solve

Haikyuu is one of the most famous Japanese manga series, which was subsequently adapted into a globally beloved anime television show. Its content concerns competitive volleyball at regional, national, and international levels. Haikyuu boasts a diverse cast of characters, ranging from fan favorites like Hinata to the lesser-known but still impactful supporting characters. However, due to the various characters in the series, some people may have trouble remembering their names, but they still want to learn more about them. Therefore, we have created a search engine that provides information on Haikyuu characters, including their names, aliases (AKA), gender, date of birth, age, height, weight, occupation, team, number, position, personality, and background. Our primary goal is to enable users to identify characters based on other information, even if they cannot recall the characters' names.

## Existing relevant systems

Our main data source is haikyuu-fancam.com, a repository of comprehensive information about all Haikyuu characters, including their appearances in specific scenes. However, our search system in development will concentrate solely on essential character details like basic information. This simplified approach aligns perfectly with our goal, which is to assist newcomers and casual Haikyuu fans in effortlessly recalling and retaining fundamental character information, thus enhancing their accessibility to and enjoyment of the anime.

The screenshot shows the Haikyuu Wiki homepage with a sidebar on the left containing links for Fandom, Explore, Media, Articles, Characters, and Community. The main content area displays the character page for Shōyō Hinata. The page includes a summary of his background, a large image of him in his school uniform, and sections for Character Info, Also Known As, and Recent Images. The 'Character Info' section lists various names and titles he has used throughout the series. The 'Recent Images' section shows thumbnails of other characters from the show.

Figure <https://haikyuu.fandom.com/wiki/Category:Characters>

## Implementation

- Data collection, example documents, and data statistics

Our search system compiles data from haikyuu.fandom.com and organizes it into a JSON file containing detailed information about 100 characters, including their name, aliases (AKA), gender, date of birth, age, height, weight, occupation, team, number, position, personality, picture, and a brief background. The data has been gathered from Haikyuu.fandom.com, and we have included both the main Haikyuu characters and others based on their roles in the anime and manga series.

### Example of JSON file:

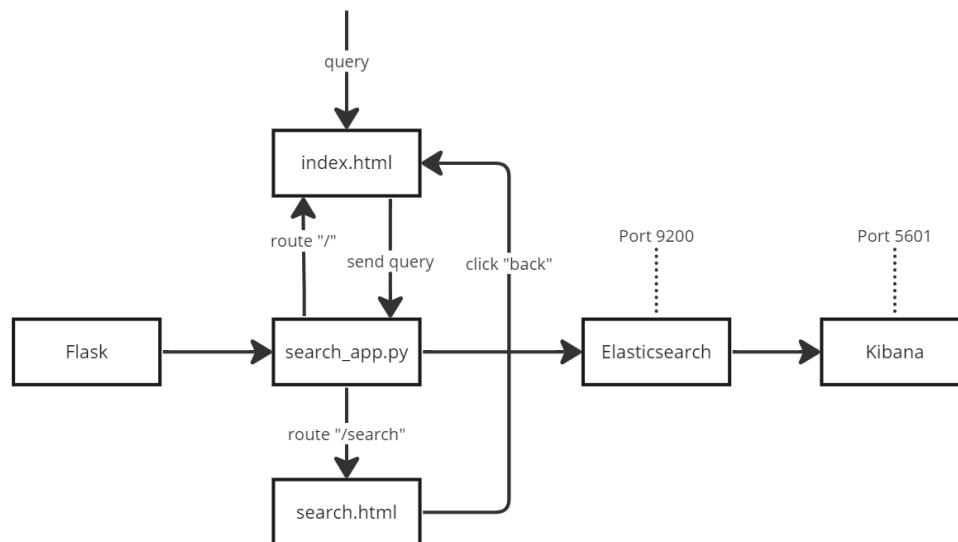
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C:\Users\>User\Downloads\(\) characters.json ...
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He is a key player for the team and is often seen leading by example during games."}, {"name": "Tobio Kageyama", "AKA": "King of the Court", "gender": "Male", "birthday": "December 22, 1996", "age": "16", "height": "181.9cm", "weight": "66.3kg", "occupation": "Player", "team": "Aoba Johoku High School", "number": "2", "position": "Middle", "personality": "Confident and arrogant, but also very skilled and competitive.", "background": "Tobio Kageyama is a member of the Aoba Johoku High School boys' volleyball team. He is known for his exceptional vertical jump and his ability to dominate the middle of the court. Tobio's primary role on the team is as a middle blocker, where he is responsible for blocking attacks from the front row. He is a key player for the team and is often seen leading by example during games."}, {"name": "Daichi Sawamura", "AKA": "", "gender": "Male", "birthday": "December 31, 1994", "age": "18", "height": "176.8cm", "weight": "70.1kg", "occupation": "Player", "team": "Aoba Johoku High School", "number": "3", "position": "Wing Spiker", "personality": "Loyal and determined, always pushing himself to improve.", "background": "Daichi Sawamura is a member of the Aoba Johoku High School boys' volleyball team. He is known for his exceptional speed and agility, particularly in the vertical jump department. Daichi's primary role on the team is as a wing spiker, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Koshi Sugawara", "AKA": "Suga-chan", "gender": "Male", "birthday": "June 13, 1994", "age": "18", "height": "174.6cm", "weight": "63.5kg", "occupation": "Player", "team": "Aoba Johoku High School", "number": "4", "position": "Wing Spiker", "personality": "Kind and friendly, always ready to help his teammates.", "background": "Koshi Sugawara is a member of the Aoba Johoku High School boys' volleyball team. He is known for his exceptional speed and agility, particularly in the vertical jump department. Koshi's primary role on the team is as a wing spiker, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Asahi Azumane", "AKA": "The Revived Ace", "gender": "Male", "birthday": "January 1, 1995", "age": "18", "height": "186.4cm", "weight": "75.2kg", "occupation": "Player", "team": "Aoba Johoku High School", "number": "5", "position": "Opposite", "personality": "Determined and focused, always pushing himself to the limit.", "background": "Asahi Azumane is a member of the Aoba Johoku High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Asahi's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Yu Nishinoya", "AKA": "Karasuno's Guardian Deity", "gender": "Male", "birthday": "October 10, 1995", "age": "17", "height": "160.5cm", "weight": "51.4kg", "occupation": "Player", "team": "Karasuno High School", "number": "6", "position": "Wing Spiker", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Yu Nishinoya is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional speed and agility, particularly in the vertical jump department. Yu's primary role on the team is as a wing spiker, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Kei Tsukishima", "AKA": "Tsukki", "gender": "Male", "birthday": "September 27, 1996", "age": "16", "height": "190.1cm", "weight": "68.4kg", "occupation": "Player", "team": "Karasuno High School", "number": "7", "position": "Opposite", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Kei Tsukishima is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Kei's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Tadashi Yamaguchi", "AKA": "Scaredy Cat Pinch Server", "gender": "Male", "birthday": "November 10, 1996", "age": "16", "height": "180.0cm", "weight": "60.4kg", "occupation": "Player", "team": "Karasuno High School", "number": "8", "position": "Wing Spiker", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Tadashi Yamaguchi is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional speed and agility, particularly in the vertical jump department. Tadashi's primary role on the team is as a wing spiker, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Kiyoko Shimizu", "AKA": "Glasses-chan and Cutie Pie", "gender": "Female", "birthday": "January 6, 1995", "age": "18", "height": "166.2cm", "weight": "55.8kg", "occupation": "Support Staff", "team": "Karasuno High School", "number": "9", "position": "Support Staff", "personality": "Kind and friendly, always ready to help her teammates.", "background": "Kiyoko Shimizu is a member of the Karasuno High School boys' volleyball team. She is known for her exceptional speed and agility, particularly in the vertical jump department. Kiyoko's primary role on the team is as a support staff member, where she is responsible for providing support and encouragement to the players. She is a key player for the team and is often seen pushing herself to the limit during games."}, {"name": "Hitoka Yachi", "AKA": "Yacchan", "gender": "Female", "birthday": "January 10, 1993", "age": "19", "height": "149.7cm", "weight": "42.5kg", "occupation": "Support Staff", "team": "Karasuno High School", "number": "10", "position": "Support Staff", "personality": "Kind and friendly, always ready to help her teammates.", "background": "Hitoka Yachi is a member of the Karasuno High School boys' volleyball team. She is known for her exceptional speed and agility, particularly in the vertical jump department. Hitoka's primary role on the team is as a support staff member, where she is responsible for providing support and encouragement to the players. She is a key player for the team and is often seen pushing herself to the limit during games."}, {"name": "Ittetsu Takeda", "AKA": "Take-chan and Sensei", "gender": "Male", "birthday": "January 10, 1983", "age": "29", "height": "166.5cm", "weight": "90.4kg", "occupation": "Coach", "team": "Karasuno High School", "number": "11", "position": "Coach", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Ittetsu Takeda is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional speed and agility, particularly in the vertical jump department. Ittetsu's primary role on the team is as a coach, where he is responsible for providing guidance and support to the players. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Keishin Uki", "AKA": "Coach", "gender": "Male", "birthday": "April 5, 1986", "age": "26", "height": "178.2cm", "weight": "72.2kg", "occupation": "Coach", "team": "Karasuno High School", "number": "12", "position": "Coach", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Keishin Uki is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional speed and agility, particularly in the vertical jump department. Keishin's primary role on the team is as a coach, where he is responsible for providing guidance and support to the players. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Tetsuro Kuroo", "AKA": "Scheming Captain, Comb Head, and Rooster Head", "gender": "Male", "birthday": "November 17, 1994", "age": "18", "height": "181.5cm", "weight": "68.9kg", "occupation": "Player", "team": "Karasuno High School", "number": "13", "position": "Opposite", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Tetsuro Kuroo is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Tetsuro's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Nobuyuki Kai", "AKA": "Uminchu", "gender": "Male", "birthday": "April 8, 1994", "age": "18", "height": "176.5cm", "weight": "66.9kg", "occupation": "Player", "team": "Karasuno High School", "number": "14", "position": "Wing Spiker", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Nobuyuki Kai is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional speed and agility, particularly in the vertical jump department. Nobuyuki's primary role on the team is as a wing spiker, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Morisuke Yaku", "AKA": "Yakum", "gender": "Male", "birthday": "August 8, 1994", "age": "18", "height": "166cm", "weight": "60.2kg", "occupation": "Player", "team": "Karasuno High School", "number": "15", "position": "Wing Spiker", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Morisuke Yaku is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional speed and agility, particularly in the vertical jump department. Morisuke's primary role on the team is as a wing spiker, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Taketora Yamamoto", "AKA": "Iora", "gender": "Male", "birthday": "February 22, 1996", "age": "17", "height": "178cm", "weight": "69.1kg", "occupation": "Player", "team": "Karasuno High School", "number": "16", "position": "Opposite", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Taketora Yamamoto is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Taketora's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Kerma Kozume", "AKA": "Nekom's Brain", "gender": "Male", "birthday": "October 16, 1995", "age": "17", "height": "170cm", "weight": "58.3kg", "occupation": "Player", "team": "Karasuno High School", "number": "17", "position": "Wing Spiker", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Kerma Kozume is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional speed and agility, particularly in the vertical jump department. Kerma's primary role on the team is as a wing spiker, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Shohei Fukunaga", "AKA": "Lucky Shohei", "gender": "Male", "birthday": "September 29, 1995", "age": "17", "height": "179cm", "weight": "68.3kg", "occupation": "Player", "team": "Karasuno High School", "number": "18", "position": "Opposite", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Shohei Fukunaga is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Shohei's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "So Inuoka", "AKA": "Lanky McSpikhead", "gender": "Male", "birthday": "November 1, 1996", "age": "16", "height": "187cm", "weight": "74.3kg", "occupation": "Player", "team": "Karasuno High School", "number": "19", "position": "Wing Spiker", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "So Inuoka is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional speed and agility, particularly in the vertical jump department. So's primary role on the team is as a wing spiker, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Tamañiko Teshiro", "AKA": "", "gender": "Male", "birthday": "January 14, 1997", "age": "16", "height": "172.2cm", "weight": "59.2kg", "occupation": "Player", "team": "Karasuno High School", "number": "20", "position": "Opposite", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Tamañiko Teshiro is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Tamañiko's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Levi Hailba", "AKA": "Levochka", "gender": "Male", "birthday": "October 30, 1996", "age": "16", "height": "196cm", "weight": "79.7kg", "occupation": "Player", "team": "Karasuno High School", "number": "21", "position": "Wing Spiker", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Levi Hailba is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional speed and agility, particularly in the vertical jump department. Levi's primary role on the team is as a wing spiker, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Yuki Shibayama", "AKA": "", "gender": "Male", "birthday": "December 16, 1996", "age": "16", "height": "162.5cm", "weight": "53.3kg", "occupation": "Player", "team": "Karasuno High School", "number": "22", "position": "Opposite", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Yuki Shibayama is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Yuki's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Yasufumi Nekomata", "AKA": "Bakeneko", "gender": "Male", "birthday": "", "age": "08", "height": "169cm", "weight": "", "occupation": "Coach", "team": "Karasuno High School", "number": "23", "position": "Coach", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Yasufumi Nekomata is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Yasufumi's primary role on the team is as a coach, where he is responsible for providing guidance and support to the players. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Toru Oikawa", "AKA": "The Great King", "gender": "Male", "birthday": "July 28, 1994", "age": "18", "height": "184.3cm", "weight": "72.2kg", "occupation": "Player", "team": "Karasuno High School", "number": "24", "position": "Opposite", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Toru Oikawa is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Toru's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Issei Matsukawa", "AKA": "Mattsun", "gender": "Male", "birthday": "March 1, 1995", "age": "18", "height": "187.9cm", "weight": "73.8kg", "occupation": "Player", "team": "Karasuno High School", "number": "25", "position": "Wing Spiker", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Issei Matsukawa is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional speed and agility, particularly in the vertical jump department. Issei's primary role on the team is as a wing spiker, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Takahiro Hanamaki", "AKA": "Makkii", "gender": "Male", "birthday": "January 27, 1995", "age": "18", "height": "184.7cm", "weight": "72.0kg", "occupation": "Player", "team": "Karasuno High School", "number": "26", "position": "Opposite", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Takahiro Hanamaki is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Takahiro's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Hajime Iwazumi", "AKA": "Iwa-chan", "gender": "Male", "birthday": "June 10, 1994", "age": "18", "height": "179.3cm", "weight": "70.2kg", "occupation": "Player", "team": "Karasuno High School", "number": "27", "position": "Opposite", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Hajime Iwazumi is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Hajime's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Shigeru Yahaba", "AKA": "", "gender": "Male", "birthday": "March 1, 1996", "age": "17", "height": "181.9 cm", "weight": "69.0 kg", "occupation": "Player", "team": "Karasuno High School", "number": "28", "position": "Opposite", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Shigeru Yahaba is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Shigeru's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Shinji Watarai", "AKA": "Watatchii", "gender": "Male", "birthday": "April 3, 1995", "age": "17", "height": "171.2cm", "weight": "62.5kg", "occupation": "Player", "team": "Karasuno High School", "number": "29", "position": "Opposite", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Shinji Watarai is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Shinji's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Yutaro Kindaichi", "AKA": "Turnip Head and Onion Head", "gender": "Male", "birthday": "June 6, 1996", "age": "16", "height": "190cm", "weight": "74.3kg", "occupation": "Player", "team": "Karasuno High School", "number": "30", "position": "Opposite", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Yutaro Kindaichi is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Yutaro's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Akira Kunimi", "AKA": "Kunimi-chan", "gender": "Male", "birthday": "March 25, 1997", "age": "16", "height": "183cm", "weight": "66.1kg", "occupation": "Player", "team": "Karasuno High School", "number": "31", "position": "Opposite", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Akira Kunimi is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Akira's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Kentaro Kyotani", "AKA": "Mad Dog", "gender": "Male", "birthday": "December 7th, 1995", "age": "17", "height": "178.8cm", "weight": "70.8kg", "occupation": "Player", "team": "Karasuno High School", "number": "32", "position": "Opposite", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Kentaro Kyotani is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Kentaro's primary role on the team is as an opposite player, where he is responsible for attacking from the back row. He is a key player for the team and is often seen pushing himself to the limit during games."}, {"name": "Nobuteru Irihata", "AKA": "", "gender": "Male", "birthday": "", "age": "52", "height": "", "weight": "", "occupation": "Head Coach", "team": "Aoba Johoku High School", "number": "33", "position": "Head Coach", "personality": "Loyal and determined, always pushing himself to the limit.", "background": "Nobuteru Irihata is a member of the Karasuno High School boys' volleyball team. He is known for his exceptional strength and agility, particularly in the vertical jump department. Nobuteru's primary role on the team is as a head coach, where he is responsible for providing guidance and support to the players. He is a key player for the team and is often seen pushing himself to the limit during games."}]
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- Tools and software

Tool and Software	Roles
1. Visual Studio Code	<ul style="list-style-type: none"> <li>- Use Visual Studio Code to create a JSON file that contains 100-character information for Haikyuu characters.</li> <li>- Utilize Visual Studio Code to edit Python and HTML files for creating and displaying websites.</li> </ul>
2. Elastic search	<ul style="list-style-type: none"> <li>- Set up Elasticsearch, a powerful search and analytics engine.</li> <li>- Create an Elasticsearch index to store the data from the JSON file.</li> <li>- Use Elasticsearch's APIs to upload the JSON file and</li> </ul>

	populate the index.
3. Kibana	<ul style="list-style-type: none"> <li>- Set up Kibana, which provides a user-friendly interface for visualizing and managing Elasticsearch data.</li> <li>- Connect Kibana to your Elasticsearch index to visualize the data.</li> <li>- Create visualizations and dashboards to explore your Haikyuu character information.</li> </ul>
4. Python (Flask)	<ul style="list-style-type: none"> <li>- Create a Flask web application, which will serve as the front end for your search engine.</li> <li>- Implement search functionality in Flask using Elasticsearch queries to interact with your Elasticsearch index.</li> <li>- Design and modify your website to provide an intuitive user interface for searching and viewing Haikyuu character information.</li> </ul>

- System diagram

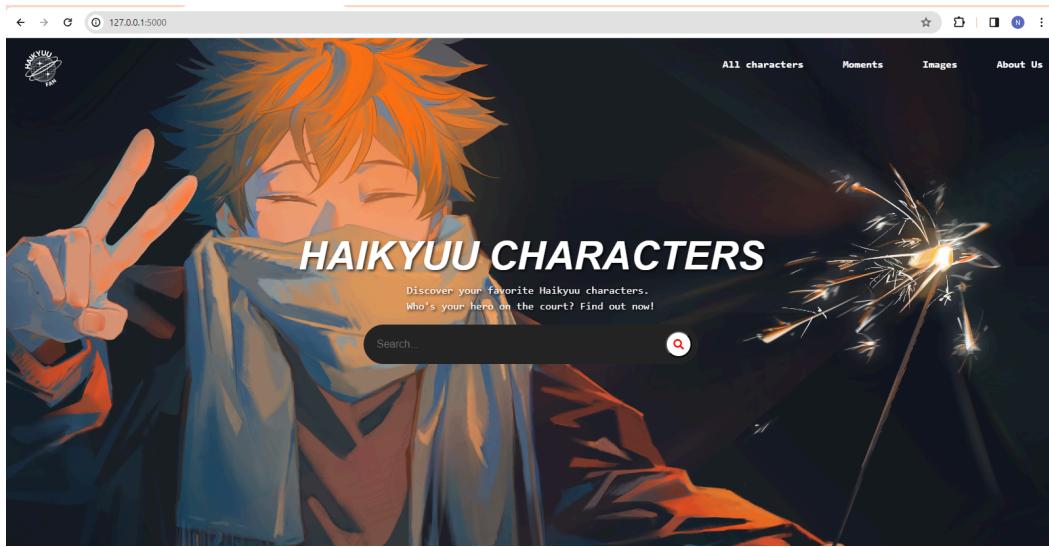


When initiating the search engine, Flask, a web framework, is utilized to create a web application. This application comprises two main pages, `index.html` and `search.html`, managed by a Python script called `search_app.py`. Once Flask is up and running, users are directed to the `index.html` page, which serves as the homepage of our search system. The `index.html` page prominently features a search box, inviting users to input queries such as a character's name, aliases (AKA), gender, and more. When a user submits a query, the system processes it by navigating to the `/search` route within the `search_app.py` file. At this point, Flask interacts with

the Elasticsearch search API, a powerful tool for searching and retrieving data. The Elasticsearch search API then returns a list of documents that match the user's query. These documents contain detailed information about characters, presented in a ranked list on the search.html page. This page serves as the platform for users to explore and find specific details about characters based on their search criteria. To enhance user experience, a "back" button is provided on the results page. Clicking this button will seamlessly return users to the search page, allowing them to refine their queries or perform new searches.

- Snapshots of the system

Main page (index.html)



Result page (search.html)

The result page for Shoyo Hinata displays his profile picture on the left and his detailed character statistics on the right. The stats include:

- Name: Shoyo Hinata
- AKA: The Strongest
- Gender: Male
- Bithday:
- Age: 15
- Height: 162.8cm
- Weight: 51.9kg
- Occupation: High School Student (1st Year, Class 1)
- Team: Karasuno High
- Number: 5
- Position: Middle Blocker
- Personality: Cheerful and energetic

The background text provides a brief summary of his background, stating he is the main protagonist of the Haikyuu!! series by Haruichi Furudate. It mentions his journey from a first-year student at Karasuno High to becoming a member of the MSBY Black Jackals and the Japan Men's National Volleyball Team, and finally joining Asas São Paulo in the Brazil Super League.

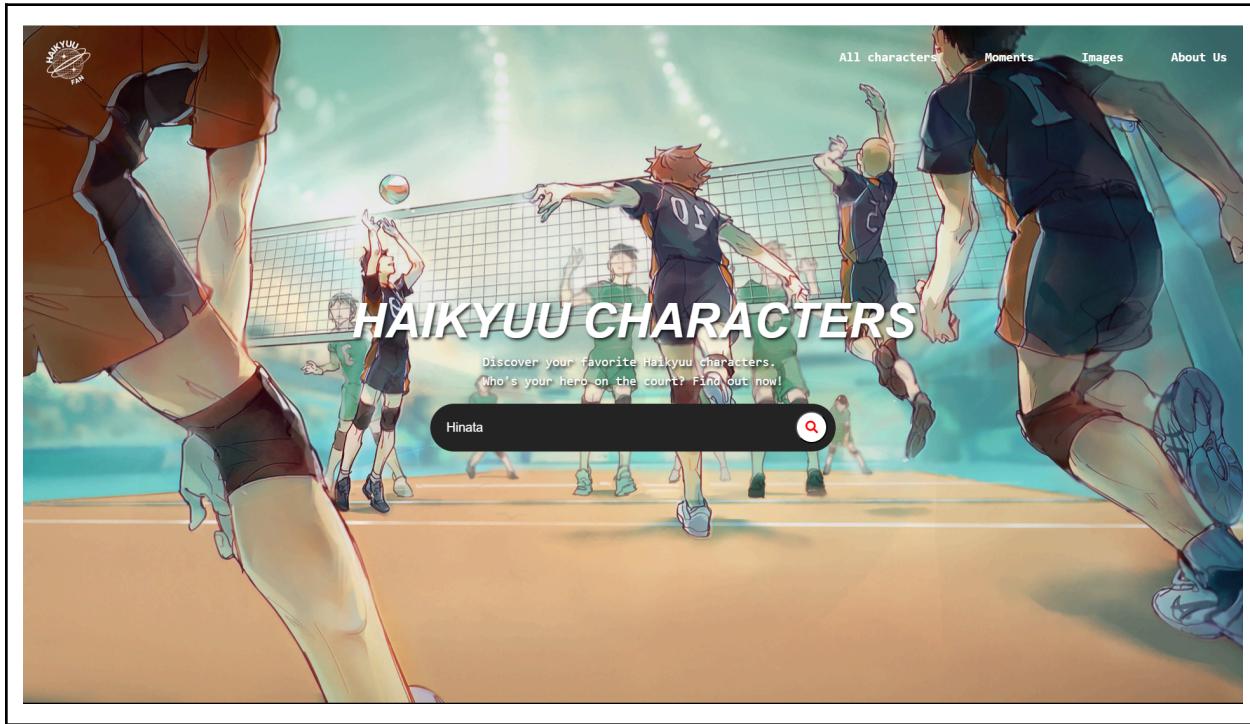
At the bottom of the page is a 'READ' button.

- Example step-by-step search sessions

### One word query - “Hinata”

For users:

1. The user inputs the query "Hinata" into a search block.



2. The system responds by directing the user to the result page.



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## SEARCH RESULT



**SHOYO HINATA**

Name: Shoyo Hinata  
 AKA: The Strongest  
 Gender: Male  
 Birthday: June 21, 1996  
 Age: 15  
 Height: 162.8cm  
 Weight: 51.9kg  
 Occupation: High School Student (1st Year, Class 1)  
 Team: Karasuno High  
 Number: 5  
 Position: Middle Blocker  
 Personality: Cheerful and energetic

Background: Shoyo Hinata is the main protagonist of the Haikyuu!! series by Haruichi Furudate. For the majority of the series, Hinata was a first-year student at Karasuno High. He was one of the middle blockers for the Boys' Volleyball Team. In 2018, Hinata became a member of the MSBY Black Jackals, a Division 1 team in the V-League. He also became a member of Japan Men's National Volleyball Team during the 2021 Olympics. As of 2022, he is now a member of Asas São Paulo, a professional team in the Brazil Super League. He is the older brother of Natsu Hinata.

[READ](#)



**YUKITAKA IZUMI**

Name: Yukitaka Izumi  
 AKA: Izumin  
 Gender: Male  
 Birthday: -  
 Age: 16  
 Height: -  
 Weight: -  
 Occupation: Junior High Student (3rd Year)  
 Team: Yukigaoka Junior High  
 Number: 6  
 Position: Setter  
 Personality: Gentle

Background: Yukitaka Izumi was Hinata's former classmate from Yukigaoka Junior High. He was originally on the basketball team but played on the volleyball team so Hinata could have enough members to go to the competition. As of 2018, he is a college senior.



**KOJI SEKIMUKAI**

Name: Koji Sekimukai  
 AKA: -  
 Gender: Male  
 Birthday: -  
 Age: 16  
 Height: -  
 Weight: -  
 Occupation: Junior High Student (3rd Year)  
 Team: Yukigaoka Junior High  
 Number: 4  
 Position: Wing Spiker  
 Personality: Tough and brash

Background: Koji Sekimukai was Hinata's former classmate from Yukigaoka Junior High. He was originally on the boys' soccer team but played on the volleyball team so Hinata could have enough members to go to the competition. As of 2018, he is a college senior.

[READ](#)

For our search system:

1. The Flask app receives the query “ Hinata”
2. The Flask app calls the Elasticsearch search API with the following query body:

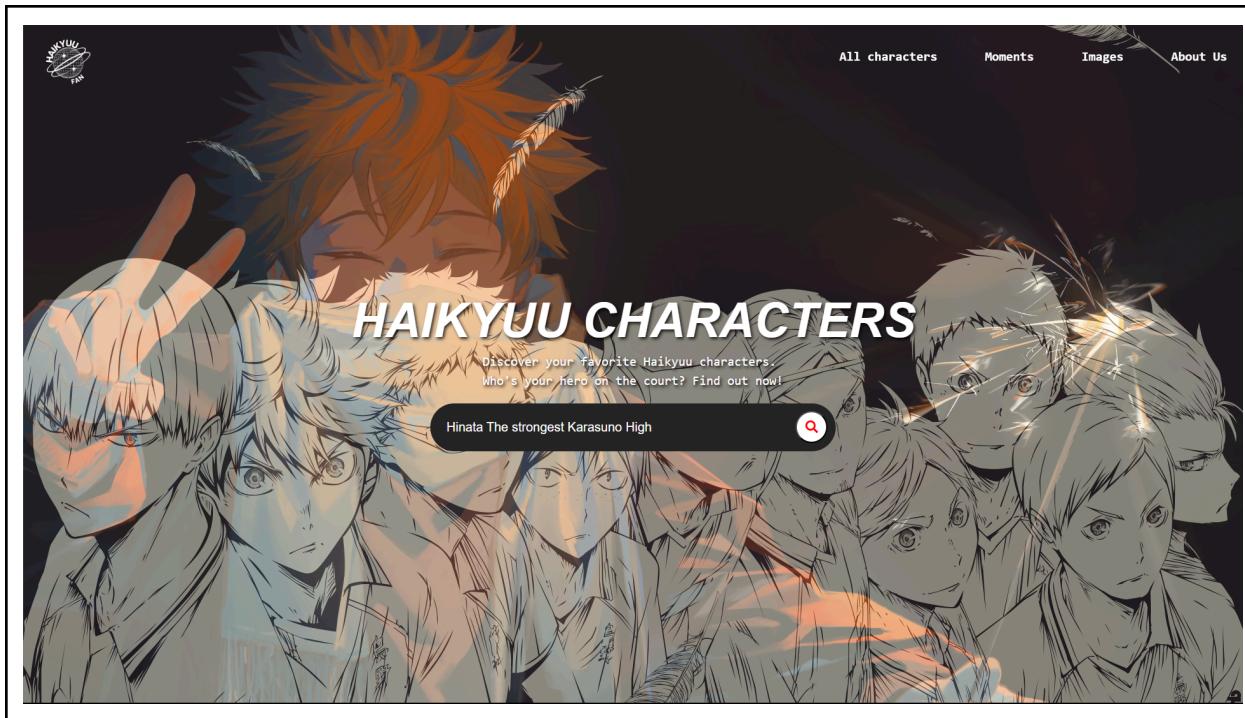
```
body = {
    "query": {
        "function_score": {
            "query": {
                "multi_match": {
                    "query": "Hinata",
                    "fields": ["name^13", "AKA^12", "gender^11", "birthday^10", "age^9", "height^8", "weight^7",
                               "occupation^6", "team^5", "number^4", "position^3", "personality^2", "background^1"],
                    "fuzziness": "AUTO",
                    "lenient": True
                }
            },
            "score_mode": "sum"
        }
    }
}
```

3. The Elasticsearch search API then returns a list of documents that match the user's query.
4. The Flask app parses the Elasticsearch response and extracts the following fields from the above picture.

## Multiple word query - “Hinata The strongest Karasuno High”

For users:

1. The user inputs the query "Hinata The strongest Karasuno High" into a search block.



2. The system responds by directing the user to the result page.

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## SEARCH RESULT

**SHOYO HINATA**

Name: Shoyo Hinata  
AKA: The Strongest  
Gender: Male  
Birthday: June 21, 1996  
Age: 15  
Height: 162.8cm  
Weight: 51.9kg  
Occupation: High School Student (1st Year, Class 1)  
Team: Karasuno High  
Number: 5  
Position: Middle Blocker  
Personality: Cheerful and energetic  
Background: Shoyo Hinata is the main protagonist of the Haikyuu!! series by Haruichi Furudate. For the majority of the series, Hinata was a first-year student at Karasuno High. He was one of the middle blockers for the Boys' Volleyball Team. In 2018, Hinata became a member of the MSBY Black Jackals, a Division 1 team in the V-League. He also became a member of Japan Men's National Volleyball Team during the 2021 Olympics. As of 2022, he is now a member of Asas São Paulo, a professional team in the Brazil Super League. He is the older brother of Natsu Hinata.

[READ](#)**YU NISHINOYA**

Name: Yu Nishinoya  
AKA: Karasuno's Guardian Deity  
Gender: Male  
Birthday: October 10, 1995  
Age: 17  
Height: 160.5cm  
Weight: 51.1kg  
Occupation: High School Student (2nd Year, Class 3)  
Team: Karasuno High  
Number: 4  
Position: Libero  
Personality: Energetic and temperamental  
Background: Yu Nishinoya was a second-year student at Karasuno High. He was the libero for the boys' volleyball team and was referred to as 'Karasuno's guardian Deity' by his teammates, for his remarkable skills. After high school, Nishinoya retired from volleyball in favor of traveling the world.

**ASAHI AZUMANE**

Name: Asahi Azumane  
AKA: The Revived Ace  
Gender: Male  
Birthday: January 1, 1995  
Age: 18  
Height: 186.4cm  
Weight: 75.2kg  
Occupation: High School Student (3rd year, class 3)  
Team: Karasuno High  
Number: 3  
Position: Outside Hitter and Ace  
Personality: Quiet and gentle  
Background: Asahi Azumane was a third-year student at Karasuno High. He was a wing spiker and its ace for the boys' volleyball club. As of 2018, he is working as an apparel designer in Tokyo.

[READ](#)**TORU OIKAWA**

Name: Toru Oikawa  
AKA: The Great King  
Gender: Male  
Birthday: July 20, 1994  
Age: 18  
Height: 184.3cm  
Weight: 72.2kg  
Occupation: High School Student (3rd Year, Class 6)  
Team: Aoba Johsai High  
Number: 1  
Position: Setter and Captain  
Personality: Flirtatious nature and intelligent  
Background: Toru Oikawa is also known as Tohru Oikawa in the English translation. For the majority of the series, he was a third-year student at Aoba Johsai High, serving as the captain and setter for the school's Boys' Volleyball Team. He is the main antagonist of the Internhigh and Spring High Preliminary Arcs. As of the Final Arc, he is a setter for Club Atlético San Juan, a professional team in the Argentine Volleyball Federation. He obtained Argentinian citizenship and plays on the Argentina National team as the starting setter.

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**TOBIO KAGEYAMA**

Name: Tobio Kageyama  
 AKA: King of the Court  
 Gender: Male  
 Birthday: December 22, 1996  
 Age: 16  
 Height: 181.9cm  
 Weight: 66.3kg  
 Occupation: High School Student (1st Year, Class 3)  
 Team: Karasuno High, Kitagawa Daichi Junior High (former)  
 Number: 9  
 Position: Setter  
 Personality: Perpetually sullen, arrogant, and undeniably short-tempered.  
 Background: Tobio Kageyama is the deuteragonist of the Haikyuu!! series. For the majority of the series, he is a first-year student at Karasuno High School and plays as the starting setter for the boys' volleyball club. He was chosen to train at the All-Japan youth training camp during his first year of high school and joined the V. league as soon as he graduated. He became a part of Japan's national volleyball team at the age of 19, participating in the Rio Olympics in 2016. In November 2018, he was playing as a setter for the Japanese V-League Division 1 team Schweiden Adlers. Currently, he is a member of Ali Roma, an Italian professional team in Italy Serie A.

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**DAICHI SAWAMURA**

Name: Daichi Sawamura  
 AKA: -  
 Gender: Male  
 Birthday: December 31, 1994  
 Age: 18  
 Height: 176.8cm  
 Weight: 70.1kg  
 Occupation: High School Student (3rd Year, Class 4)  
 Team: Karasuno High  
 Number: 1  
 Position: Captain  
 Personality: A very caring and responsible captain  
 Background: Daichi Sawamura was a third-year student at Karasuno High. He was the captain and a starting wing spiker for the Boys' Volleyball Team. During the period when the original coach, Tkkei Ukai, was hospitalized, he was one of the captains who had to act as the team's coach. As of 2018, he is currently part of the Miyagi Prefectural Police in the Community Safety Division.

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**KOSHI SUGAWARA**

Name: Koshi Sugawara  
 AKA: Suga-chan  
 Gender: Male  
 Birthday: June 13, 1994  
 Age: 18  
 Height: 174.6cm  
 Weight: 63.5kg  
 Occupation: High School Student (3rd Year, Class 4)  
 Team: Karasuno High  
 Number: 2  
 Position: Setter  
 Personality: Soothing and gentle  
 Background: Koshi Sugawara was a third-year student at Karasuno High. He was the vice-captain, a substitute setter, and pinch server for the Boys' Volleyball team. As of 2018, he is an elementary school teacher in Miyagi.

[READ](#)



**KEI TSUKISHIMA**

Name: Kei Tsukishima  
 AKA: Tsukki  
 Gender: Male  
 Birthday: September 27, 1996  
 Age: 16  
 Height: 198.1cm  
 Weight: 68.4kg  
 Occupation: High School Student (1st Year, Class 4)  
 Team: Karasuno High  
 Number: 3  
 Position: Middle Blocker  
 Personality: Blunt and discreetly  
 Background: Kei Tsukishima is a first-year at Karasuno High. He plays as one of the starting middle blockers on the boys' volleyball team. He is currently a college student as well as a middle blocker for the Sendai Frogs, a Division 2 team in the V League, and will start work at the Sendai City Museum after graduating college. He is the younger brother of Akiteru Tsukishima.

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**TADASHI YAMAGUCHI**

Name: Tadashi Yamaguchi  
 AKA: Scaredy Cat Pinch Server  
 Gender: Male  
 Birthday: November 10, 1996  
 Age: 16  
 Height: 180.0cm  
 Weight: 63.0kg  
 Occupation: High School Student (1st Year, Class 4)  
 Team: Karasuno High  
 Number: 12  
 Position: Middle Blocker and Pinch Server  
 Personality: A pretty shy person  
 Background: Tadashi Yamaguchi was a first-year student at Karasuno High. He was a middle blocker and pinch server for the Boys' Volleyball Team. During his third-year, he became the team captain. He is currently a college student and is planning to work for a home electronics company in Miyagi once he graduates.

**READ**



**KIYOKO SHIMIZU**

Name: Kiyoko Shimizu  
 AKA: Glasses-chan and Cutie Pie  
 Gender: Female  
 Birthday: January 6, 1995  
 Age: 18  
 Height: 166.2cm  
 Weight: 52.4kg  
 Occupation: High School Student (3rd Year, Class 2)  
 Team: Karasuno High  
 Number: -  
 Position: Manager  
 Personality: Quiet and reserved  
 Background: Kiyoko Shimizu was a third-year student at Karasuno High, as well as one of the managers for the Karasuno boy's volleyball team for the majority of the series. As of November 2018, she is married to Ryunosuke Tanaka and has changed her name to Kiyoko Tanaka. She currently works as a sports store employee.

**READ**

For our search system:

1. The Flask app receives the query “Hinata The strongest Karasuno High”
2. The Flask app calls the Elasticsearch search API with the following query body:

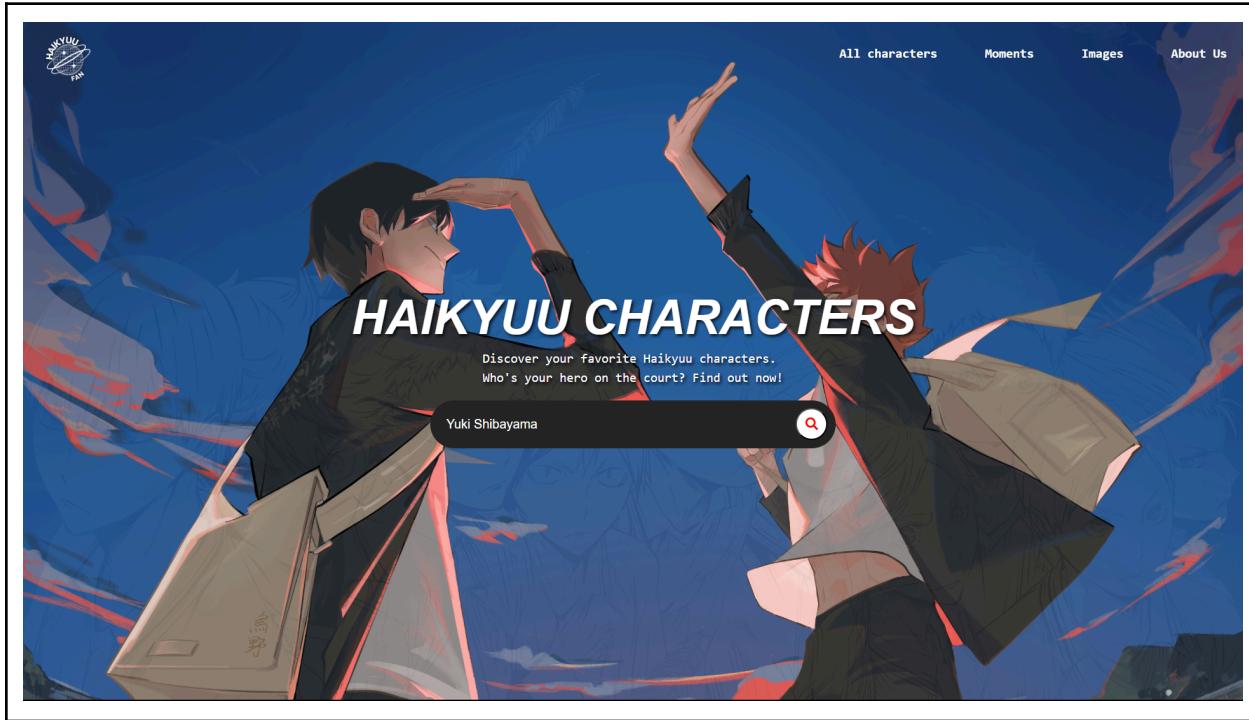
```
body = {
  "query": {
    "function_score": {
      "query": {
        "multi_match": {
          "query": "Hinata The strongest Karasuno High",
          "fields": ["name^13", "AKA^12", "gender^11", "birthday^10", "age^9", "height^8", "weight^7",
                     "occupation^6", "team^5", "number^4", "position^3", "personality^2", "background^1"],
          "fuzziness": "AUTO",
          "lenient": True
        }
      },
      "score_mode": "sum"
    }
  }
}
```

3. The Elasticsearch search API then returns a list of documents that match the user's query.
4. The Flask app parses the Elasticsearch response and extracts the following fields from the above picture.

## Partial match - “Yuki Shibayama”

For users:

1. The user inputs the query "Yuki Shibayama" into a search block.



2. The system responds by directing the user to the result page.

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## SEARCH RESULT



**YUKI SHIBAYAMA**

Name: Yuki Shibayama  
 AKA: -  
 Gender: Male  
 Birthday: December 16, 1996  
 Age: 16  
 Height: 162.5cm  
 Weight: 53.3kg  
 Occupation: High School Student (1st Year, Class 4)  
 Team: Nekoma High  
 Number: 12  
 Position: Libero  
 Personality: Shy and gentle  
 Background: Yuki Shibayama was a first-year student at Nekoma High. He was one of the liberos for the Boys' Volleyball Team. As of 2021, Shibayama plays as a libero for Tokai Heavy Industries Esperanza, a Division 2 volleyball team.

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**YUKI SHIROISHI**

Name: Yuki Shiroishi  
 AKA: Shiro  
 Gender: Male  
 Birthday: -  
 Age: 17  
 Height: 177.2cm  
 Weight: 67.8kg  
 Occupation: High School Student (3rd Year, Class 3)  
 Team: Wakutani Minami High  
 Number: 4  
 Position: Outside Hitter  
 Personality: -  
 Background: Yuki Shiroishi is a third-year wing spiker from Wakutani Minami High.

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**YUJI TERUSHIMA**

Name: Yuji Terushima  
 AKA: Mr. Close-Cropped Hair  
 Gender: Male  
 Birthday: April 18, 1995  
 Age: 17  
 Height: 177.2cm  
 Weight: 66.7kg  
 Occupation: High School Student (2nd Year, Class 7)  
 Team: Johzenji High  
 Number: 1  
 Position: Outside Hitter and Captain  
 Personality: Childish and extremely energetic  
 Background: Yuji Terushima is a second-year at Johzenji High. He is part of the Boys' Volleyball Club, playing as a wing spiker and the team captain. As of November 2018, he is an apprentice hair stylist.

[READ](#)

For our search system:

1. The Flask app receives the query “Yuki Shibayama”
2. The Flask app calls the Elasticsearch search API with the following query body:

```
body = {  
    "query": {  
        "function_score": {  
            "query": {  
                "multi_match": [  
                    {"query": "Yuki Shibayama",  
                     "fields": ["name^13", "AKA^12", "gender^11", "birthday^10", "age^9", "height^8", "weight^7",  
                               "occupation^6", "team^5", "number^4", "position^3", "personality^2", "background^1"],  
                     "fuzziness": "AUTO",  
                     "lenient": True  
                ]  
            },  
            "score_mode": "sum"  
        }  
    }  
}
```

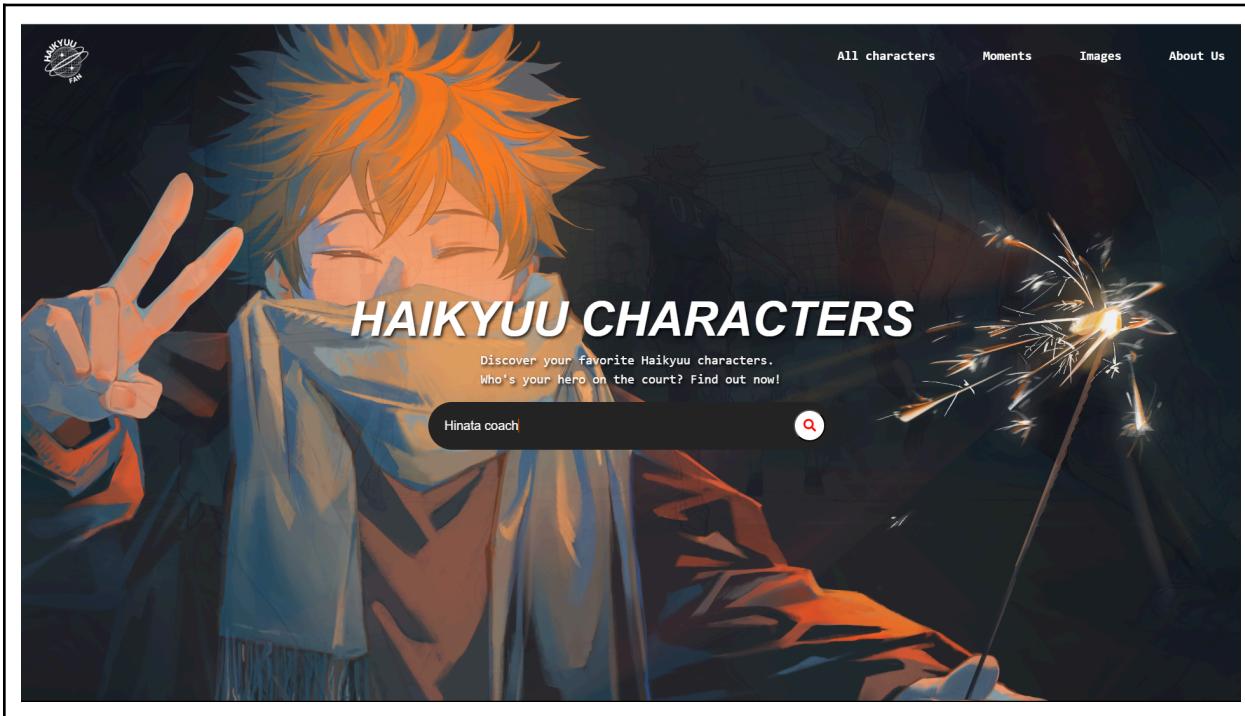
3. The Elasticsearch search API then returns a list of documents that match the user's query.
4. The Flask app parses the Elasticsearch response and extracts the following fields from the above picture.

## Ranking - “ Hinata coach”

In our ranking system, we not only consider the score derived from the most queried information, but we also factor in a field-based ranking. This involves prioritizing the name initially and then proceeding to evaluate other criteria. The rationale behind this approach is that solely relying on the score from the most queried information may result in the user's desired name being ranked lower. This discrepancy arises from an overemphasis on certain elements, such as background information. By first ranking based on the name, we aim to ensure that the most relevant and desired information is given priority before considering other factors in our evaluation process.

For users:

1. The user inputs the query "Hinata coach" into a search block.



2. The system responds by directing the user to the result page.

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## SEARCH RESULT

**SHOYO HINATA**

Name: Shoyo Hinata  
AKA: The Strongest  
Gender: Male  
Birthday: June 21, 1996  
Age: 15  
Height: 162.8cm  
Weight: 51.9kg  
Occupation: High School Student (1st Year, Class 1)  
Team: Karasuno High  
Number: 5  
Position: Middle Blocker  
Personality: Cheerful and energetic  
Background: Shoyo Hinata is the main protagonist of the Haikyuu!! series by Haruichi Furudate. For the majority of the series, Hinata was a first-year student at Karasuno High. He was one of the middle blockers for the Boys' Volleyball Team. In 2018, Hinata became a member of the MBSV Black Jackals, a Division 1 team in the V-League. He also became a member of Japan Men's National Volleyball Team during the 2021 Olympics. As of 2022, he is now a member of Asas São Paulo, a professional team in the Brazil Super League. He is the older brother of Natsu Hinata.

[READ](#)

**KEISHIN UKAI**

Name: Keishin Ukai  
AKA: Coach  
Gender: Male  
Birthday: April 5, 1986  
Age: 26  
Height: 178.2cm  
Weight: 72.2kg  
Occupation: Coach and Owner of Sakanoshita Store  
Team: Karasuno High  
Number: 2  
Position: Coach  
Personality: Lazy and cranky  
Background: Keishin Ukai is the current coach of Karasuno High Boys' Volleyball Club. He is also an alumnus and former player on the team, having played as a setter.

**TANJI WASHIJO**

Name: Tanji Washijo  
AKA: Demon Coach  
Gender: Male  
Birthday: -  
Age: 78  
Height: 169cm  
Weight: -  
Occupation: Coach  
Team: Shiratorizawa Academy  
Number: 10  
Position: Wing Spiker  
Personality: Stubborn and loud  
Background: Tanji Washijo is the head coach of Shiratorizawa Academy's Boys' Volleyball Team.

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**YASUFUMI NEKOMATA**

Name: Yasufumi Nekomata  
AKA: Bakeneko  
Gender: Male  
Birthday: -  
Age: 68  
Height: 169cm  
Weight: -  
Occupation: Coach  
Team: Nekoma High  
Number: 10  
Position: Coach and Setter  
Personality: Rather competitive and childish  
Background: Yasufumi Nekomata is the head coach for Nekoma High's Boys' Volleyball Club

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Name: Sadayuki Mizoguchi  
AKA: -  
Gender: Male  
Birthday: -  
Age: 31  
Height: -  
Weight: -  
Occupation: Coach  
Team: Aoba Johsai High  
Number: -  
Position: Coach  
Personality: Respectful around other adults  
Background: Sadayuki Mizoguchi is the coach of the Aoba Johsai High boys' volleyball team.

SADAYUKI MIZOGUCHI

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IKKEI UKAI

Name: Ikkel Uka  
AKA: Shitty Old Man  
Gender: Male  
Birthday: -  
Age: 69  
Height: -  
Weight: -  
Occupation: Coach  
Team: Karasuno High  
Number: 5  
Position: Opposite Hitter  
Personality: Strict  
Background: Ikkel Uka is the former coach of Karasuno High's boys' volleyball club. He once led the team to Nationals and was well-known in Miyagi Prefecture and even some other parts of Japan. After becoming hospitalized, he stopped his work as a high school coach. Currently, he coaches kids at Lill' Tykes Volleyball Classroom.

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NOBUTERU IRIHATA

Name: Nobuteru Irihata  
AKA: -  
Gender: Male  
Birthday: -  
Age: 52  
Height: -  
Weight: -  
Occupation: Head Coach  
Team: Aoba Johsai High  
Number: -  
Position: Head Coach  
Personality: Extremely confident and laid back  
Background: Nobuteru Irihata is the head coach of the Aoba Johsai High boys' volleyball team.

READ



YUKITAKA IZUMI

Name: Yukitaka Izumi  
AKA: Izumin  
Gender: Male  
Birthday: -  
Age: 16  
Height: -  
Weight: -  
Occupation: Junior High Student (3rd Year)  
Team: Yukigaoka Junior High  
Number: 6  
Position: Setter  
Personality: Gentle  
Background: Yukitaka Izumi was Hinata's former classmate from Yukigaoka Junior High. He was originally on the basketball team but played on the volleyball team so Hinata could have enough members to go to the competition. As of 2018, he is a college senior.

READ



**KOJI SEKIMUKAI**

Name: Koji Sekimukai  
 AKA: -  
 Gender: Male  
 Birthday: -  
 Age: 16  
 Height: -  
 Weight: -  
 Occupation: Junior High Student (3rd Year)  
 Team: Yukigaoka Junior High  
 Number: 4  
 Position: Wing Spiker  
 Personality: Tough and brash  
 Background: Koji Sekimukai was Hinata's former classmate from Yukigaoka Junior High. He was originally on the boys' soccer team but played on the volleyball team so Hinata could have enough members to go to the competition. As of 2018, he is a college senior.

[READ](#)



**ITTETSU TAKEDA**

Name: Ittetsu Takeda  
 AKA: Take-chan and Sensei  
 Gender: Male  
 Birthday: January 10, 1983  
 Age: 29  
 Height: 166.5cm  
 Weight: 59.4kg  
 Occupation: High School Teacher  
 Team: Karasuno High  
 Number: -  
 Position: Teacher Advisor  
 Personality: Polite and respectful of others  
 Background: Ittetsu Takeda is the faculty advisor and head coach of the Karasuno High boys' volleyball club, though the practical coaching is performed by Keishin Ukai.

[READ](#)

For our search system:

1. The Flask app receives the query “Hinata coach”
2. The Flask app calls the Elasticsearch search API with the following query body:

```
body = {
    "query": {
        "function_score": {
            "query": {
                "multi_match": {
                    "query": "Hinata coach",
                    "fields": ["name^13", "AKA^12", "gender^11", "birthday^10", "age^9", "height^8", "weight^7",
                               "occupation^6", "team^5", "number^4", "position^3", "personality^2", "background^1"],
                    "fuzziness": "AUTO",
                    "lenient": True
                }
            },
            "score_mode": "sum"
        }
    }
}
```

3. The Elasticsearch search API then returns a list of documents that match the user's query.
4. The Flask app parses the Elasticsearch response and extracts the following fields from the above picture.

## Discussion

- Limitation of our search system

Our search system is specifically designed to search and display information only about characters from the anime or manga series Haikyuu. Our database exclusively contains data related to these characters. Consequently, if a user attempts to search for characters that are not part of the Haikyuu series, the system will not yield any results as it lacks information about characters beyond Haikyuu. In simpler terms, the search system is constrained to the boundaries of the Haikyuu. Any queries for characters from other series or unrelated content will not produce any outcomes, given the system's limited dataset.

- Technical difficulties, challenges, and lessons learned

Our development process encountered several technical difficulties and challenges, accompanied by valuable lessons learned.

The initial challenge revolved around Kibana, where we faced difficulty in accessing it after the second use. This resulted in repetitive installations, leading to time wastage. To address this issue, we are actively working on finding a more sustainable solution to enhance the accessibility and reliability of Kibana.

Another challenge emerged from the quality of images sourced directly from haikyuu.fandom.com. Some images were not in high definition, potentially impacting user satisfaction. We proactively tackled this by sourcing higher-resolution images, ensuring a better visual experience for users.

Handling special characters, particularly Japanese characters in our data, presented another obstacle. To ensure a seamless presentation of information, we implemented a solution to convert these characters into English equivalents. This was crucial for preventing display issues and ensuring that users could access character information without impediments.

**Shōyō Hinata** (Japanese: 日向 翔陽 *Hinata Shōyō*) is the main protagonist of the *Haikyū!!* series by *Haruichi Furudate*. For the majority of the series, Hinata was a first-year student at *Karasuno High*. He was one of the middle blockers for the Boys' Volleyball Team.

"Shoyo Hinata is the main protagonist of the Haikyuu!! series by Haruichi Furudate."

Lastly, we identified a technical glitch that arose when encountering empty fields in the search column, leading to internal error messages. To mitigate this, we implemented a systematic approach by replacing all empty fields with a designated placeholder such as "-", preventing disruptions in the search results and offering a more user-friendly experience.

Rintaro Numajiri", "AKA": "-", "gender": "Male", "birthday": "hi Izaka", "AKA": "-", "gender": "Male", "birthday": " - ", "aiyuu", "AKA": "Tsucchi", "gender": "Male", "birthday": " - ", "shima", "AKA": " - ", "gender": "Male", "birthday": "August 29", "tabi", "AKA": "Pineapple-head", "gender": "Male", "birthday": "Hanayama", "AKA": " - ", "gender": "Male", "birthday": "April 10", "roishi", "AKA": "Shiro", "gender": "Male", "birthday": " - ", "uke Kita", "AKA": "Mister Perfect Kita", "gender": "Male", "

These challenges taught us the importance of anticipating and addressing potential issues proactively. We've gained insights into refining our processes, ensuring data consistency, and continually optimizing the user experience. Each challenge provided an opportunity for improvement, guiding us toward a more robust and reliable search system.

- Opportunities for future improvements

In the evolution of our search engine, several opportunities for future improvements present themselves. Since our current prototype utilizes a multi-match query with a fuzziness setting, future development could explore different types of search queries. By diversifying the search mechanisms, we aim to enhance the relevance and accuracy of search results, providing users with a more refined and tailored experience. Looking ahead, we aspire to enrich the user experience by incorporating additional information about Haikyuu. This could involve integrating character-related videos, offering users a dynamic and engaging perspective. Given ample time and resources, we also aspire to broaden the scope of our search engine by incorporating more characters from the Haikyuu. This expansion not only caters to the diversity of user interests but also enhances the comprehensiveness of our search system. In summary, the future roadmap for our search engine includes refining search queries for better precision, incorporating multimedia elements, expanding data coverage, and continuously growing the character database. These improvements collectively aim to elevate the user experience and make our search engine a comprehensive and indispensable tool for Haikyuu enthusiasts.

## Conclusion

The Haikyuu Character Search System is a testament to the seamless blend of meticulous design and technical innovation, providing a vital connection for fans and Haikyuu enthusiasts. Leveraging Elasticsearch and the quicksort algorithm, the system offers an intuitive platform for users to easily access comprehensive information about Haikyuu characters. Through the compilation of data from haikyuu.fandom.com, organization into a JSON file, and integration with Flask, Elasticsearch, and Kibana, a user-friendly interface is generated. This not only solves the issue of forgetting character names but also serves as a valuable resource, significantly enhancing accessibility and enjoyment for Haikyuu fans globally.

## Reference

- [1] “Haikyū!! wiki,” Fandom, [https://haikyuu.fandom.com/wiki/Haikyuu!!\\_Wiki](https://haikyuu.fandom.com/wiki/Haikyuu!!_Wiki) (accessed Nov. 17, 2023).
- [2] “HTML snippets for Twitter bootstrap framework,” Bootsnipp.com, <https://bootsnipp.com/snippets/GaeQR> (accessed Nov. 17, 2023).
- [3] 340+ haikyū!! HD wallpapers and backgrounds, [https://wall.alphacoders.com/by\\_sub\\_category.php?id=232856](https://wall.alphacoders.com/by_sub_category.php?id=232856) (accessed Nov. 17, 2023).
- [4] J. T. Mark Otto, “Download,” · Bootstrap v5.1, <https://getbootstrap.com/docs/5.1/getting-started/download/> (accessed Nov. 17, 2023).