**Meeting Record (IOT)**

**Date**: June 26, 2023

**Location**: Seminar Room, Beijing University of Posts and Telecommunications Library

**Agenda**:

Discussion of specific tasks and work assignments for the summer term project.

**Meeting Summary**:

In this group meeting, the three students majoring in the Internet of Things (IoT) discussed the detailed tasks and work assignments for the summer term project to ensure a smooth project progression.

**Project Objectives**:

We clarified the project's objectives, which are to develop an object detection model using deep learning technology to achieve intelligent recognition of keys, Rubik's cubes, and books. Specifically, our objectives include:

1.Implementation of an image recognition model capable of precise identification of keys, Rubik's cubes, and books.

2.Providing an adequate amount of training data to ensure accuracy.

3.Building a user-friendly graphical user interface (GUI) to enable user interaction and view recognition results.

**Work Assignments:**

To achieve the project objectives, we assigned specific work tasks and related details as follows:

Yutong Wang: Primarily responsible for collecting image data, including pictures of keys, Rubik's cubes, and books, and organizing this data to create a training dataset. Additionally, Student A will assist in data labeling for the purpose of model training.

Yuhang Yang: Responsible for selecting a suitable deep learning algorithm, building the object detection model, and initiating model training. This process will include model construction, data preprocessing, and hyperparameter tuning.

Jiatong Du: Mainly responsible for designing and developing the project's graphical user interface (GUI) to visualize training results and provide a user-friendly interface.

**Specific Steps and Next Actions**:

Yutong Wang will collaborate with the team to collect and organize a substantial amount of image data, ensuring diversity and data quality. Subsequently, Student A will assist with data labeling to provide standardized data for model training.

Yuhang Yang will begin researching and selecting the appropriate deep learning algorithm and commence model training. This will encompass model construction, data preprocessing, and hyperparameter adjustments.

Jiatong Du will initiate the design and development of the GUI, ensuring seamless integration with the model and offering a user-friendly interface.

We anticipate achieving the project's goals by the end of the summer term, making a meaningful contribution to the intelligent recognition of keys, cubes, and books.

This summarizes the specifics and decisions made during this group meeting. If there are any additional requirements or changes, we can discuss them at any time. We appreciate everyone's participation and cooperation.

**Meeting Record (IOT)**

**Date**: June 25, 2023

**Location**: Seminar Room, Beijing University of Posts and Telecommunications Library

**Agenda**:

1. Discussion of current issues with the model.

2. Brainstorming and planning for model optimization.

3. Strategies to find additional training images for improved recognition accuracy.

**Meeting Summary:**

In our group meeting, the three students specializing in the Internet of Things (IoT) discussed several key aspects related to the ongoing project.

**Discussion of Model Issues:**

We began by addressing the issues we have encountered with the current model. Notably, we identified challenges with accuracy and the model's ability to effectively recognize target objects.

**Brainstorming Model Optimization:**

To address the issues with model accuracy and performance, we engaged in a brainstorming session on strategies for model optimization. Key considerations include fine-tuning hyperparameters, exploring different network architectures, and optimizing the training process.

**Strategies for Additional Training Images:**

Recognizing the importance of training data, we discussed strategies to expand our dataset with more diverse images. We agreed on the following approaches:

Yutong Wang will continue to collect and curate additional images of keys, Rubik's cubes, and books to augment our training dataset.

Yuhang Yang and Jiatong DU will explore data augmentation techn iques to increase the dataset's diversity and help the model generalize better.

Yuhang Yang and Jiatong DU will investigate the possibility of obtaining labeled images from open-source datasets to further enrich our training data.

This summarizes the discussions and decisions made during the second group meeting. We appreciate the commitment of all team members to enhance the project's success.

**Meeting Record**

**Date**: September 25, 2023

**Location**: Student Activity Center, Beijing University of Posts and Telecommunications

**Attendees**: Full Team (11 members)

Agenda:

1. Presentation of achievements within each major.

2. Discussion on integrating the three majors' projects into a unified project.

3. Defining the specific functionalities to be implemented.

**Meeting Summary**:

In our meeting, attended by all 11 members representing different majors, we focused on sharing the progress and capabilities within each major's domain and explored ways to amalgamate these capabilities into a single, cohesive project.

**Presentation of Achievements:**

Each major provided an overview of their accomplishments and functionalities within their respective domains. This presentation served as a foundation for understanding the strengths of each major and how they could be combined effectively.

- Electrical Engineering Major: The electrical engineering team showcased the functionality of a small car equipped with a camera that can capture real-time images.

- IoT Major: The IoT team demonstrated their ability to perform object detection and recognition, with a specific focus on keys, Rubik's cubes, and books.

- E-commerce Major: The e-commerce team presented their web platform and its capabilities for displaying information and products.

**Discussion on Integration:**

Following the presentations, we engaged in a discussion about how to integrate the three majors' projects into a unified project. After deliberation, the team reached the following decisions:

- The small car from the electrical engineering students will be equipped with a camera to capture real-time images. These images will be transmitted to the IoT students.

- The IoT students will process the images, perform object detection, and recognize the objects, specifically keys, cubes, and books.

- The IoT students will also generate a graphical user interface (GUI) to visualize the recognition results.

- Finally, the e-commerce students will integrate the results into their website, displaying the information about the recognized objects.

Specific Functionalities:

The team identified the specific functionalities to be implemented as follows:

- Electrical Engineering : Develop the hardware setup for the small car with a camera.

- IoT: Implement real-time image processing, object detection, object recognition, and GUI development.

- E-commerce: Integrate the results into the e-commerce website.

This concludes the discussions and decisions made during the third group meeting. The collaboration between majors is expected to lead to the successful integration of our individual projects into a cohesive and functional whole.

**Meeting Record**

**Date**: October 6, 2023

**Location**: Underground Laboratory, Beijing University of Posts and Telecommunications

**Attendees**:

- Students from IoT and Electrical Engineering Majors

**Agenda:**

1. Addition of real-time camera capture to the small car.

2. Setting up a path for image capture to facilitate object detection.

**Meeting Summary:**

In our meeting, attended by students from the Internet of Things (IoT) and Electrical Engineering majors, we focused on enhancing the small car's capabilities by adding real-time camera capture and setting up a path for image capture to support object detection.

**Addition of Real-Time Camera Capture:**

The primary agenda item was the addition of real-time camera capture functionality to the small car. This enhancement would enable the car to capture images continuously, providing a stream of data for further processing. Students from the Electrical Engineering major presented the technical aspects of adding a camera to the car.

**Setting Up a Path for Image Capture:**

To streamline the image capture process, we discussed the importance of setting a predefined path for the small car. This path would guide the car and the camera, ensuring systematic and comprehensive image capture.

**Next Steps:**

The team agreed on the following next steps:

- Electrical Engineering students will work on integrating a camera onto the small car, enabling real-time image capture.

- IoT students will collaborate to develop the path for image capture and ensure that the car follows this path during operation.

This concludes the discussions and decisions made during the fourth group meeting. The addition of real-time camera capture and path setup will enhance our project's capabilities for image detection.

**Meeting Record**

**Date**: October 8, 2023

**Location**: Student Activity Center, Beijing University of Posts and Telecommunications

**Attendees**:

- Students from IoT and E-commerce Majors

**Agenda:**

1. Discussion of object detection results and how IoT's generated GUI will be presented on the website created by E-commerce students.

2. Discussion of code-related issues.

**Meeting Summary:**

In our group meeting, attended by students from the Internet of Things (IoT) and E-commerce majors, we focused on discussing the results of object detection and how IoT's generated GUI will be integrated into the website created by E-commerce students. Additionally, we addressed various code-related issues.

**Discussion of Object Detection Results:**

We began the meeting by reviewing the results of object detection carried out by the IoT team. The IoT students presented their progress in recognizing objects, specifically keys, Rubik's cubes, and books. We discussed the accuracy of the recognition process and the quality of the generated GUI.

**Integration of IoT's GUI into E-commerce Website:**

The primary agenda item was to discuss how the GUI generated by the IoT team would be integrated into the website created by the E-commerce students. We explored options for seamless integration to ensure a user-friendly experience for website visitors.

**Discussion of Code Issues:**

During the meeting, we addressed various code-related issues that arose during the development process. The team collaborated to identify and resolve these issues to ensure the smooth functioning of the project.

**Next Steps:**

The following next steps were agreed upon:

- IoT students will continue to fine-tune the GUI and ensure its compatibility with the E-commerce website.

- E-commerce students will collaborate to resolve code-related issues and oversee the integration of the IoT-generated GUI.

This concludes the discussions and decisions made during the fifth group meeting. The integration of the GUI and resolution of code-related issues will enhance the project's overall functionality and user experience.

**Meeting Record**

**Date**: October 10, 2023

**Location**: Student Activity Center, Beijing University of Posts and Telecommunications

**Attendees:**

- All members from the three majors

**Agenda:**

1. Joint testing of the project to identify and discuss issues.

2. Discussion of group presentation matters, including deciding on the presentation format and content.

**Meeting Summary:**

In our meeting, attended by all members from the three majors, we focused on conducting joint testing of the project to identify and discuss any issues that may have arisen. Additionally, we discussed matters related to the group presentation, including deciding on the presentation format and content.

**Joint Testing of the Project:**

We initiated the meeting by jointly testing the project. Each major's contributions were integrated to assess the overall functionality and performance of the project. Our aim was to identify any issues, glitches, or areas in need of improvement.

**Discussion of Group Presentation:**

We engaged in a discussion regarding the group presentation, which will be a key aspect of our project's delivery. The discussion revolved around the following aspects:

- Presentation Format: The team discussed the format of the presentation, including whether it should be in the form of slides, a live demonstration, or a combination of both.

- Presentation Content: We determined the key content that should be covered during the presentation. This included showcasing the project's objectives, the contributions of each major, challenges faced, and the solutions implemented.

Next Steps:

The team agreed on the following next steps:

- Collaborate to address any issues identified during joint testing.

- Begin preparing the group presentation, selecting the format and content based on our discussion.

This concludes the discussions and decisions made during the sixth group meeting. Joint testing and preparation for the group presentation are essential steps in our project's progress.