

Hexo

2023-11-24

DreamCatcherHolo

Week 1

Project conception and concept elaboration - Detailed introduction to the source of inspiration for the project, target user groups, expected goals and specific problems to be solved.

Week 2

Technical Framework Construction - An in-depth explanation of the technology stack used and the reasons for its selection, including drone hardware selection, the principles of sleep monitoring algorithms, and data collection methods.

Week 3

Data Collection Strategies - Discuss challenges in the data collection process, how to ensure data quality, and considerations for data privacy.

Week 4

Data Processing and Analysis - Analyze the data processing pipeline, including in-depth explanations of pre-processing, cleaning, feature extraction and model building.

Week 5

Visualization Design Ideas - Describe the logic of designing Sankey diagrams and tree diagrams, and how to ensure the accuracy and user-friendliness of data visualization.

Week 6

User Experience and Interface Design - Analyze how users interact with the system, user experience considerations, and how to improve user satisfaction through interface design.

Week 7

Testing, Feedback and Improvements - Describe the problems encountered during testing, user feedback collected, and project improvements based on this feedback.

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DreamCatcher-Holo-text2image

Week 1: Research Basics and Project Planning

- 1.Study the theoretical basis of the Stable Diffusion model, especially the technical details mentioned in the paper.
- 2.Define the goals and expected outcomes of the project.
- 3.Identify project milestones including dataset preparation, model training, validation and deployment.

Week 2: Development environment setup

- 1.Create a conda environment that adapts to the Stable Diffusion model and ensure the compatibility of all dependent libraries.
- 2.Run through a simple instance of the model in a local environment to verify the correctness of the installation.

Week 3: Dataset screening and preprocessing

- 1.Select the subset of data suitable for training the Stable Diffusion model.
- 2.Start data cleaning, annotation and enhancement to improve model training effect.

Week 4: Preliminary model training and parameter adjustment

- 1.Start preliminary training using a subset of the LAION-5B database.
- 2.Implement model parameter adjustments to improve the quality of image generation.

Week 5: Text-to-image generation experiment

- 1.Implement image generation experiments based on text descriptions and record the results.
- 2.Adapted CLIP ViT-L/14 text encoder to enhance text-to-image consistency.

Week 6: Model Optimization and Integration Testing

- 1.Optimize the model to improve the resolution and details of image synthesis.
- 2.Integrate the model in the user interface and test the end-to-end process.

Week 7: Safety and Ethics Review

- 1.Content moderation of generated images to ensure they comply with social ethical standards.
- 2.Integrated security checker to reduce the probability of inappropriate content being generated.

Week 8: UX Design and Feedback

- 1.Develop an intuitive user experience interface that allows users to easily enter dream descriptions and obtain results.
- 2.Invite internal users to experience and collect feedback for improvement.

Week 9: Model Performance Evaluation

- 1.Extensive performance evaluation of the model, including testing of different text prompts and guidance scales.
- 2.Analyze and record output quality and model response under different configurations.

Week 10: Project summary and video recording

- 1.Record a detailed video showing the conversion process from text to image and the resulting dream image.
- 2.Summarize the key learning points and successful experiences of the project.
- 3.Prepare the final model and code for release.

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DreamCatcher-Holo-sleep-health

Day 1:

- Design the data collection module to ensure that accurate sleep data can be collected while the user is sleeping.
- Implement preliminary testing of data collection.

Day 2:

- Develop data analysis algorithms for processing collected sleep data.
- Preliminarily generate a scatter plot of sleep data, showing the distribution of sleep duration by age and gender.

Day 3:

- Implement more complex data visualizations, such as correlation heat maps, to explore relationships between different physiological indicators.
- Adjustments to generated heatmaps to optimize visual presentation.

Day 4:

- Develop code to generate Sankey diagrams that reveal flow relationships between weight categories and sleep disorders.
- Debugged and optimized the layout and style of Sankey diagrams.

Day 5:

- Implement the generation of tree diagrams to more intuitively display the data hierarchy.
- Completed the detail adjustment and style unification of the tree diagram.

Day 6:

- Comprehensive testing of all data visualization charts to ensure data accuracy and chart stability.
- Refactor the code to improve the readability and maintainability of the module.

Day 7:

- Prepare project documents and write README files to ensure that others can understand and use the project.
- Push all code and documents to GitHub repository and write detailed submission information.

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DreamCatcher-Holo-FaceDetect

Day 1-3

- Initialize the project and set up the code repository.
- Implement basic face detection function to determine whether the user is asleep.
- Add a data collection module to collect users' sleep data.
- Develop data analysis scripts to generate preliminary Sankey diagrams and dendrograms.
- Set up the cloud storage function and upload the generated charts to the cloud for users to access.

Day4-6

- Optimize the face detection algorithm to improve accuracy under different lighting and angles.
- Updated data analysis algorithms to improve the visual effects and data accuracy of Sankey diagrams and dendrograms.
- Implement automated data analysis processes, including data cleaning and preprocessing.
- Add error handling and exception catching mechanisms to ensure the robustness of the data analysis process.

Day7-9

- Test all data analysis functions to ensure accuracy and reliability.
- Fix all bugs found and refactor the code to improve the readability and maintainability of the module.
 - Write unit tests to ensure the stability of main functions.
- Complete the documentation of the data analysis module to facilitate subsequent development and use.

Day9-12

- Based on user feedback, adjust chart design to enhance user experience.
- Improve the cloud storage function and optimize the data upload and retrieval speed.
- Conduct code reviews, optimize performance, and reduce unnecessary resource consumption.
- Prepare the first version of data analysis functionality for release, tag it and generate release notes.

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