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Design and Implementation of "Yangxin" Wellness Popularization Short Video Platform Based on WeChat Mini Program

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Abstract: The growing demand for health information is unmet by existing medical popularization due to fragmented content, professional jargon, and rampant pseudo-science. Aligned with the "Healthy China 2030" outline, this paper designs and implements "Yangxin," a WeChat Mini Program platform for wellness short videos. Adopting a decoupled architecture with a three-tier role system, it features short videos, intelligent recommendations, AI Q&A, and content moderation. The platform operates stably and efficiently, offering a lightweight and highly credible solution for digital health communication.

Keywords: WeChat Mini Program; Wellness Science Popularization; Short Video; AI Health Q&A.

1. Introduction

With the implementation of the "Healthy China 2030" Planning Outline, the health demands of residents have shifted from "disease treatment" to "disease prevention," making the enhancement of national health literacy a top priority. Consequently, the public's demand for health knowledge continues to grow, covering individuals across all age groups[1-2]. However, existing health science popularization platforms suffer from issues such as disordered information, insufficient scientific rigor, and a high susceptibility to commercial misguidance, coupled with weak interactivity and targeted relevance[3]. Drawing upon the health communication theories in Literature[4], this paper analyzes the current industry status and communication dilemmas to clearly define the functional design direction of the platform, thereby providing both theoretical and practical references for the development of the industry.

Despite research progress, challenges in health communication remain. This paper designs "Yangxin," a WeChat Mini Program platform for wellness short videos. Leveraging lightweight access, AI Q&A, and strict content auditing, it offers authoritative content and personalized consultations to enhance public health literacy and support the "Healthy China" strategy.

2. Technical Implementation of the Platform

Leveraging the WeChat Mini Program as its core carrier, the platform adopts a decoupled frontend-backend architecture to satisfy the requirements for cross-platform adaptation, high-concurrency services, and stable scalability.

Using Node.js, Vue3, and UniApp, the frontend supports WeChat Mini Programs and H5. The lightweight, aging-friendly interface simplifies operations for the elderly and maintains a minimalist style for younger users, coupled with real-time recommendations to elevate the overall user experience.

The Go and Gin-based backend[5] utilizes a microservices architecture for high-concurrency and low-latency responses. Its layered design decouples modules to ensure excellent scalability and maintainability for stable operation and iterative upgrades. The key code is as follows:

```
// Gin Backend API Example
package main
import "github.com/gin-gonic/gin"
func main() {
    r := gin.Default()
    r.GET("/api/science/list", func(c
*gin.Context) {
        c.JSON(200, gin.H{
            "code":200,
            "msg":"Achieve success",

"data":[]gin.H{{"id":1,"title":"A
Guide to Heart Health in Spring"}},
        })
    })
    r.Run(":8080")}
```

The platform utilizes MySQL to store structured data such as users, qualifications, content, and audits, while leveraging Redis to cache hot data and recommendation results. This setup significantly enhances response speed and concurrency capabilities, ensuring stable and efficient services. The key code is as follows:

```
--  User Table
CREATE TABLE `user` (
  `id` bigint NOT NULL
AUTO_INCREMENT,
  `openid` varchar(64) NOT NULL
COMMENT 'WeChat openid',
  `nickname` varchar(32) DEFAULT
NULL,
  `create_time` datetime DEFAULT
CURRENT_TIMESTAMP,
  PRIMARY KEY (`id`),
  UNIQUE KEY `openid` (`openid`)
```

```
  ) ENGINE=InnoDB DEFAULT
CHARSET=utf8mb4 COMMENT=' User Table';
  //Caching Hot Popular Science Data
with Redis
  func CacheHotScience(c *gin.Context)
{
    data, err :=
redis.Get("hot_science_list").Result()
    if err == nil {
        c.JSON(200, data)
        return
    }
    list := db.GetHotScience()
    redis.Set("hot_science_list", list,
time.Minute*10)
    c.JSON(200, list)
  }
```

The platform utilizes Docker containerization to unify the deployment environment, relying on cloud servers for computing power and security. This supports the stable operation of high-concurrency access and AI Q&A, successfully meeting the demands for user growth and functional iteration.

3. Design of Platform Functional Modules

To align with practical usage scenarios, the platform is structured into administrator, regular user, and expert terminals, as delineated in Figure 1.

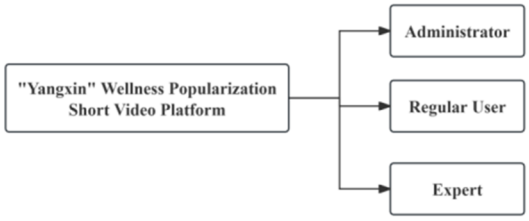

Figure 1. Platform Composition

(1) Functional Modules of the Administrator Terminal

The administrator terminal serves as the core for management and operations, accessible to the operations team and administrative staff. It is responsible for full-process control, compliance auditing, and system maintenance. The terminal comprises five core functional sub-modules, with the specific design illustrated in Figure 2.

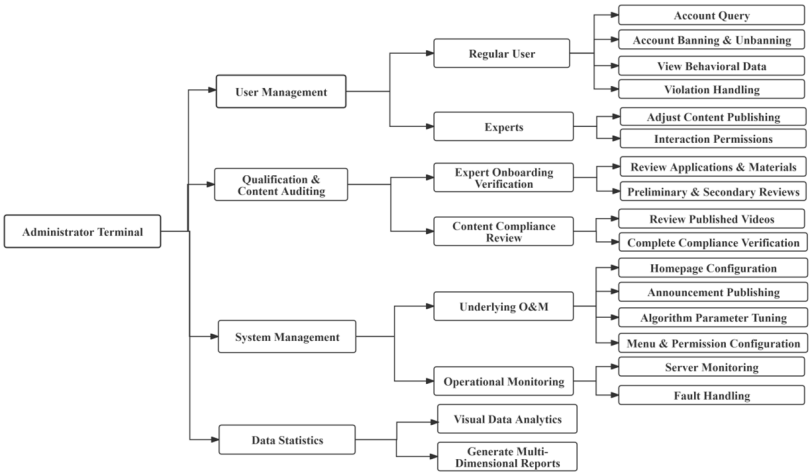

Figure 2. Administrator Terminal Modules

User Management Module: The module undertakes the unified administration of all users. It enables account query, banning, unbanning, behavior review, and violation handling for regular users. Additionally, it configures and adjusts permissions regarding content publishing and interaction for experts to regulate their behaviors and maintain an orderly user ecosystem. The implementation effect is shown in Figure 3.

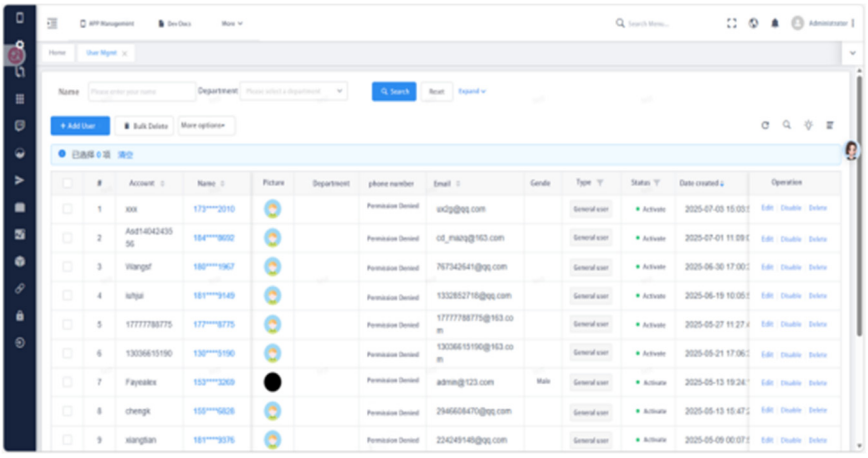

Figure 3. User Management Diagram

Qualification and Content Review Module: As the core for compliant operations, this module consists of two main

functions. First, Expert Qualification Verification, which reviews application materials through preliminary and secondary checks to decide on entry approvals. Second, Content Compliance Auditing, which inspects published short videos for compliance and executes necessary actions on violations.

System Management Module:The module handles underlying operations and maintenance (O&M) and monitoring. It covers homepage configuration, announcement publishing, algorithm parameter adjustment, and menu permission configuration. Simultaneously, it monitors server status, interface response, and user concurrency, enabling timely fault handling to ensure stable operations.

Data Statistics Module: The module visualizes full-scale business data, covering video views, likes, and AI Q&A usage. It generates multi-dimensional reports to provide data-driven support for operational decisions and content optimization.

(2) Functional Modules of the Regular User Terminal

Serving as the platform's core carrier for wellness seekers across all age groups, the regular user terminal is designed around the full process of "Content Acquisition - Intelligent Interaction - Community Engagement." It comprises six core functional sub-modules, with the specific design illustrated in Figure 4.

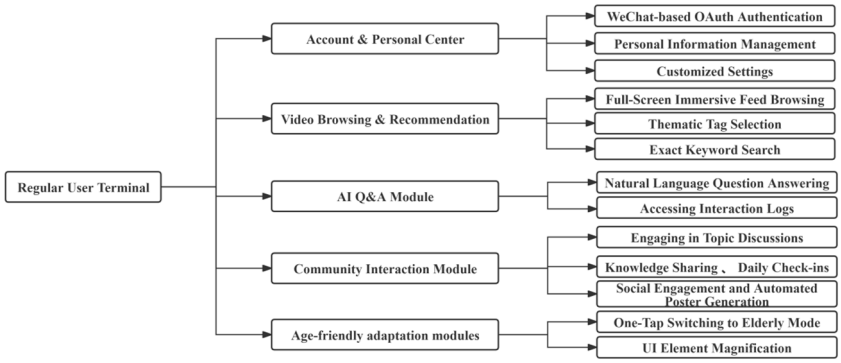

Figure 4. Regular User Terminal Modules

Account and personal center module: The model supports one-click WeChat authorization, simplifying registration for elderly users. The personal center covers profile management, saved content, viewing history, likes, comments, feedback, and settings, enabling users to manage their data and adjust personalized options like font size and playback.

Short Video Browsing and Recommendation Module:As the platform's core module, the homepage adopts a full-screen feed to display wellness videos, supporting vertical swiping, likes, favorites, comments, and shares. Users can select thematic tags such as "Dietary Therapy" and "Acupoint Massage"to view specific content[6], while the built-in search satisfies proactive information retrieval needs.

AI-powered Q&A module:Providing personalized consultation, this module allows users to input health inquiries and leverages Large Language Models to rapidly generate scientific and accessible answers. It supports viewing and saving chat history, facilitating the transition from "passive content consumption" to "active information seeking."

Community Interaction Module: The module establishes a wellness community where users participate in topical discussions, publish personal experiences, and share check-in content while engaging via likes and comments. It also supports generating check-in posters for WeChat groups to facilitate social virality.

Age-friendly adaptation modules: Tailored for the elderly, this module supports a one-click switch to Senior Mode, enlarging fonts and icons while simplifying entry points. It offers variable-speed playback and large-font subtitles for videos, effectively lowering the usage barrier.

(3) Functional Modules of the Expert Terminal

Serving as the platform's core for content production and professional support, the expert terminal is accessible to verified physicians, nutritionists, and health managers. Centered around content generation and professional interaction, it comprises four core functional sub-modules, with the specific design illustrated inFigure5.

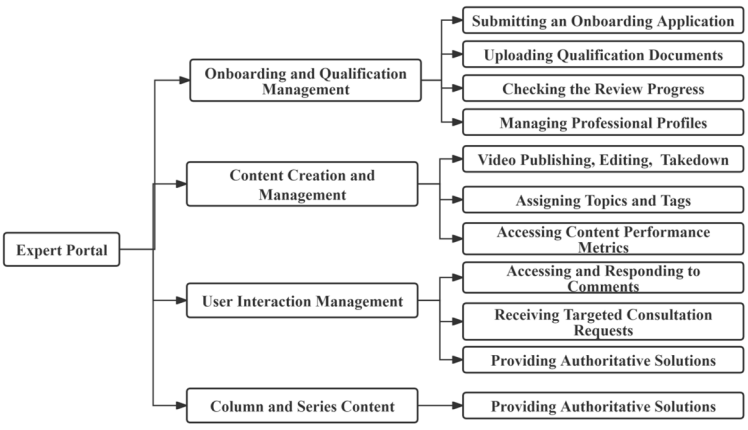

Figure 5. Expert Terminal Modules

Onboarding and Qualification Management Module: The module allows experts to submit applications, upload qualification materials, and track review progress. Once approved, they can customize their homepage with professional titles, specialized fields, and a brief bio to build their brand.

Content Creation and Management Module: Experts can manage the full lifecycle of short videos, including publishing, editing, and unpublishing. It supports video uploading, copywriting, and tagging. They can review performance metrics like views, likes, favorites, and comments, optimizing content creation based on user feedback. The key code is as follows:

```
  func InitRoutes() {
      api.POST("/upload",
middleware.Auth(),
controllers.UploadVideo)
  }
  func UploadVideo(ctx Context) {
      fileInfo := ctx.GetFile()
  userID := ctx.GetUserID()
  storageUrl, err :=
storage.Manager.Save(fileInfo)
  go
utils.ProcessHLSTranscoding(storageUrl
)
  newVideo := models.Video{URL:
storageUrl, OwnerID: userID}
  models.CreateVideo(&newVideo)
ctx.JSON(SuccessResponse(newVideo))
  }
  type FileStorage interface {
      Save(file File) (string, error)
  }
  var Manager FileStorage =
oss.NewAliyunOSS()
```

User Interaction Management Module: Experts can review comments on their videos and provide professional responses and Q&A. They can also receive directed consultations from users to offer specialized guidance, strengthening interaction and enhancing user stickiness.

Column and Series Content Management Module: Supporting experts in creating wellness columns, this module systematically integrates content under the same theme to facilitate structured learning for users.

4. Application Effects

The platform operates stably with convenient login and aging adaptation. Smooth video loading, precise recommendations, and timely AI responses ensure a superior user experience. Supported by a dual-audit mechanism to eliminate false information, the system achieves stable concurrency and accurate statistics, effectively popularizing wellness knowledge across all ages.

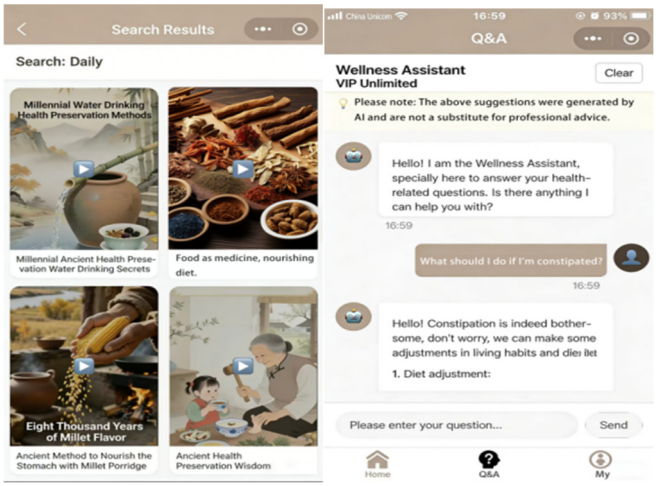

Figure 6. Platform interface

5. Conclusion

Guided by authority, inclusivity, convenience, and scientific rigor, the "Yangxin" platform builds an integrated health service system. By simplifying operations and optimizing user experience, it meets public wellness needs in a lightweight format to enhance national health literacy. In the future, the platform will expand application scenarios and enrich content, striving to become a highly credible health service platform that supports the "Healthy China" initiative.

Acknowledgments

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