**关于视频流推荐系统的技术设计**

**概述**

本技术设计文档旨在详细描述一个基于Golang、Gin、PostgreSQL、GORM和Vue+Nuxt.js的视频流推荐系统的 设计和实现。系统将包括用户管理、视频管理、推荐算法以及前端展示等功能模块。

**技术栈**

1. 后端：

。 编程语言：Golang o Web框架：Gin

。 数据库：PostgreSQL

o ORM：GORM 2. 前端：

。 框架：Vue.js

。 服务端渲染：Nuxt.js

**系统架构**

系统采用前后端分离的架构，前端通过HTTP API与后端进行数据交互。后端负责业务逻辑处理和数据存储，前端 负责用户交互和界面展示。



**功能模块**

**用户管理**

**功能描述**

. 用户注册 . 用户登录

. 用户信息管理

**数据库设计**

表名：User

|  |
| --- |
| type User struct { gorm.Model  ID string `json:"id" gorm:"primaryKey"`  Username string `json:"username" gorm:"unique"` Password string `json:"-" gorm:"not null"`  } |

**API设计**

 注册：

|  |
| --- |
| POST /api/user/register |

 登录：

. 获取用户信息：

. 修改密码：

POST /api/user/login

|  |
| --- |
| GET /api/user |

|  |
| --- |
| PUT /api/user/password |

. 修改用户名：

. 删除用户：

PUT /api/user/username

|  |
| --- |
| DELETE /api/user |

**推荐系统**

**功能描述**

. 根据视频点赞数量推荐视频

**推荐算法**

. 基于点赞数量的推荐算法

**数据库设计**

表名：Movie

|  |
| --- |
| type Movie struct { gorm.Model  Title string `json:"title"` Author string `json:"author"`  Like uint `json:"like" gorm:"default:0"`  Path string `json:"path"`  } |

**API设计**

GET /api/movie/movies%2Fe3b4ab48-5e14-4041-9d70-eeee9087a4c0.mp4

. 视频推荐：

3. **视频管理**

**功能描述**

. 上传视频

 获取视频列表 . 获取视频详情

**数据库设计**

表名：History

|  |
| --- |
| type History struct {  `json:"movie\_id"` `json:"user\_id"`  uint  string  CreatedAt \*time.Time `json:"time"`  MovieID  UserID } |

表名：History

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| type Like struct {   |  |  |  | | --- | --- | --- | | ID | int | `json:"id" gorm:"primaryKey"` | | MovieID | uint | `json:"movie\_id"` | | UserID | string | `json:"user\_id"` | | } |  |  | |

**API设计**

 视频上传： . 视频删除：

POST /api/movie DELETE /api/movie

. 已上传视频信息的获取：

|  |
| --- |
| GET /api/movie/author |

. 指定Id的视频的获取：

|  |
| --- |
| GET /api/movie |

 视频列表的获取：

GET /api/movie/list

**项目结构**

**后端实现——Golang和Gin框架**

|  |  |  |  |
| --- | --- | --- | --- |
| API-Big-Work | | | |
| ├─ ├─ ├─ │ │ ├─ ├─ ├─ ├─ │ │ │ │ │ ├─ ├─ │ │ │ │ │ │ │ │ | .gitignore  API设计与实现\_大作业\_精简版 .pdf  config  ├─ config.go └─ url\_test.go  go.mod go.sum main.go models | | |
| ├─ ├─ ├─ ├─ └  ─ | history.go init.go  like.go movie.go user.go | |
| README.md server | | |
| ├─ │ │ │ │ ├─ └  ─ | middlewares | |
| ├─ ├─ ├─ └  ─ | jwt.go  logger.go  rate\_limit.go  request\_counter.go |
| router.go service  ├ | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| │ │ │ └─ | |  |  | | --- | --- | | ├─  ├─ └─ utils | movie\_service.go service.go  user\_service.go |   jwt.go  ├─ ├─ ├─ ├─ └  jwt\_test.go password.go  password\_test.go response.go  ─ |  |

**前端实现——Vue.js和Nuxt.js框架**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| tiktok-web   |  |  | | --- | --- | | ├─ | .gitignore | | ├─ | app.vue | | ├─ | assets | | │ | ├─ css | | │ | │ └─ main.css | | │ | └─ images | | │ | ├─ mobile-case.png | | │ | ├─ tiktok-logo-small.png | | │ | ├─ tiktok-logo-white.png | | │ | └─ tiktok-logo.png | | ├─ | bun.lockb | | ├─ | components | | │ | ├─ AuthOverlay.vue | | │ | ├─ EditProfileOverlay.vue | | │ | ├─ Login.vue | | │ | ├─ MenuItem.vue | | │ | ├─ MenuItemFollow.vue | | │ | ├─ PostMain.vue | | │ | ├─ PostUser.vue | | │ | ├─ Register.vue | | │ | ├─ SideNavMain.vue | | │ | ├─ TextInput.vue | | │ | ├─ TopNav.vue | | │ | └─ UploadError.vue | | ├─ | layouts | | │ | ├─ MainLayout.vue | | │ | └─ UploadLayout.vue | | ├─ | nuxt.config.ts | | ├─ | package-lock.json | | ├─ | package.json | | ├─ | pages | | │ | ├─ index.vue | | │ | ├─ post | | │ | │ └─ [id].vue | | │ | ├─ profile | | │ | │ └─ [id].vue | | │ | └─ upload | | │ | └─ index.vue | | ├─ | plugins | | │ | ├─ axios.js | | │ | └─ stores.js | | ├─ | pnpm-lock.yaml | | ├─ | public | | │ | └─ favicon.ico | | ├─ | README.md | | ├─ | stores | | │ | ├ | |

|  |  |  |  |
| --- | --- | --- | --- |
| │ │ │ ├─ └  ─ | |  |  | | --- | --- | | ├─ ├─ └  ─ | general.js profile.js user.js |   tailwind.config.js tsconfig.json |

**总结**

本视频流推荐系统通过Golang和Gin框架构建高效的后端服务，结合PostgreSQL和GORM实现数据存储与操 作。前端采用Vue.js和Nuxt.js实现用户友好的界面和交互。系统功能模块包括用户管理、视频管理和推荐系统， 各模块间通过API进行数据交互，实现完整的推荐系统功能。