
基于 Python 的智能小区管理系统的设计与实现

摘 要

近些年来，随着 5G 时代的到来，人工智能、人脸识别等技术都将迎来全面的革新，信息化、数字化技术也从简单的查询和添加操作发展到了各种组合型的复杂操作等。智能化小区便是在这一大时代中应声而出的新型概念。

本文主要是对智能化小区为研究对象，重点研究基于 Python 技术采用前后端分离技术实现的智能化小区管理系统。系统含有多个系统功能模块，覆盖了小区物业的日常管理中作中的各个方面，从而极大地提高了企业管理小区的工作效率。

系统采用 Python 语言为基础，系统服务层以 Django 框架为基础采用 RESTful 设计风格进行 API 接口编写，数据模型采用 ORM 系统进行定义，降低了开发人员的工作效率，提高了数据库设计的快捷性并很好地突出了面向对象的编程思想。系统编写的 API 接口可以与多个平台的前端页面进行通信，从而提高了开发效率并且降低了维护成本，只需要一套后端程序即可实现 Web 端、APP 端等多端通信业务。系统中的数据存储于 MySQL 数据库中，并对系统中时效性较低的数据进行了缓存处理保存至 Redis 数据库中，提高系统的并发能力为用户带来更好的体验。

关键词：Python；Django；RESTful；Redis；MySQL 数据库

Abstract

In recent years, with the advent of the 5G era, technologies such as artificial intelligence and facial recognition will usher in a comprehensive innovation. Information and digitization technologies are also evolving from simple query and operation of addition to various complex operations.

The article mainly focuses on smart communities as the research object, and smart community management based on Python technology with first-class technology. The system consists of six modules: community resident information management, water-supply information management, power-supply information management, vehicle information management, security personnel information management and information management of foreign personnel and administrator, covering all aspects of the daily management of community property, thus greatly improve the efficiency of business management community.

The system is based on Python language, the system service layer uses the API interface based on RESTful style, the web framework is supported by the heavyweight Django framework, and the data model is defined by ORM system. The mentioned above lowers the producer's productivity and speeds up the ease of the database design and highlights the object-oriented programming thinking well. The API interface written by the system can communicate with the front page of multiple platforms, thus improving development efficiency and reducing maintenance costs, and only a set of the latter applications can be used to realize various communication services such as Web and APP. The data store in the system are stored in the MySQL database, and less time-consuming data in the system will be stored and stored in the Redis database, which improves the concurrency ability of system to bring the users a better experience.

Keywords: Python; Django; RESTful; MySQL Database

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