

Development of a Prototype Recommender System for Video-on-Demand Platform

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Abstract

Recommender algorithms can guide users in a personalized way to interesting objects in a large space of possible options. The necessity of recommendations is increasing on cultural or entertainment and media industries, where the number of products is continuously increasing.

Cultural and media platforms and digital markets are getting heavily benefitted from implementing, maintaining, and improving their recommender system. The process on how they retrieve cultural products like music, books, movies, news and enable easy access to the users can have a structural impact on how markets operate alongside how consuming trends change. The aim is to develop a framework maintaining standard and modern software development methodologies and tools to ensure seamless service, research scope on real data and diversity, evaluation, and delivering a platform for further improvement in system.

Introduction

Artificial Intelligence (AI) has emerged as a technical scenario of underlying modern-day real-life solutions to increasingly important tasks in daily life and work. AI solutions are typically come in the form of software as a service (SaaS). Which also can be called Intelligence Software. For any type of internet service, marketing, entertainment and commerce, recommender system has become extensively used AI system that are boosting revenues and maintaining digital consuming trends. For any web media portal such as – YouTube, Netflix, Canal+, Sky, Amazon Prime, Spotify etc., their own recommendation algorithms play a huge role for consumer satisfaction and marketing.

The prospect of this project is to engineer a complete recommender system for Noozy TV, a new video-on-demand platform dedicated for the viewers of Grand Est region in France.

Noozy AI

Noozy TV is a video on demand platform, a part of CEI project consisting of developing a video streaming platform for the Grand Est Region of France. Its main purpose is to focus on the regional audio-visual productions that were limited to local visualizations and valorise the regional culture by diffusing content for a wide range of users. Noozy TV also integrates the intelligence system to analyse users and know more about their preferences so to offer them personalized contents. Team - BIRD of Loria, Nancy is working on the development and managing the system naming Noozy AI.

- SaaS
- Dependable Intelligence Software Engineering
- Open-source tools and libraries
- Basic video recommendation
- Various collaborative filtering algorithms
- Various content-based filtering algorithms
- Scope of research
- Scope of engineering
- Study on diversity on recommendation
- Evaluation of recommendations
- Evolution of data processing

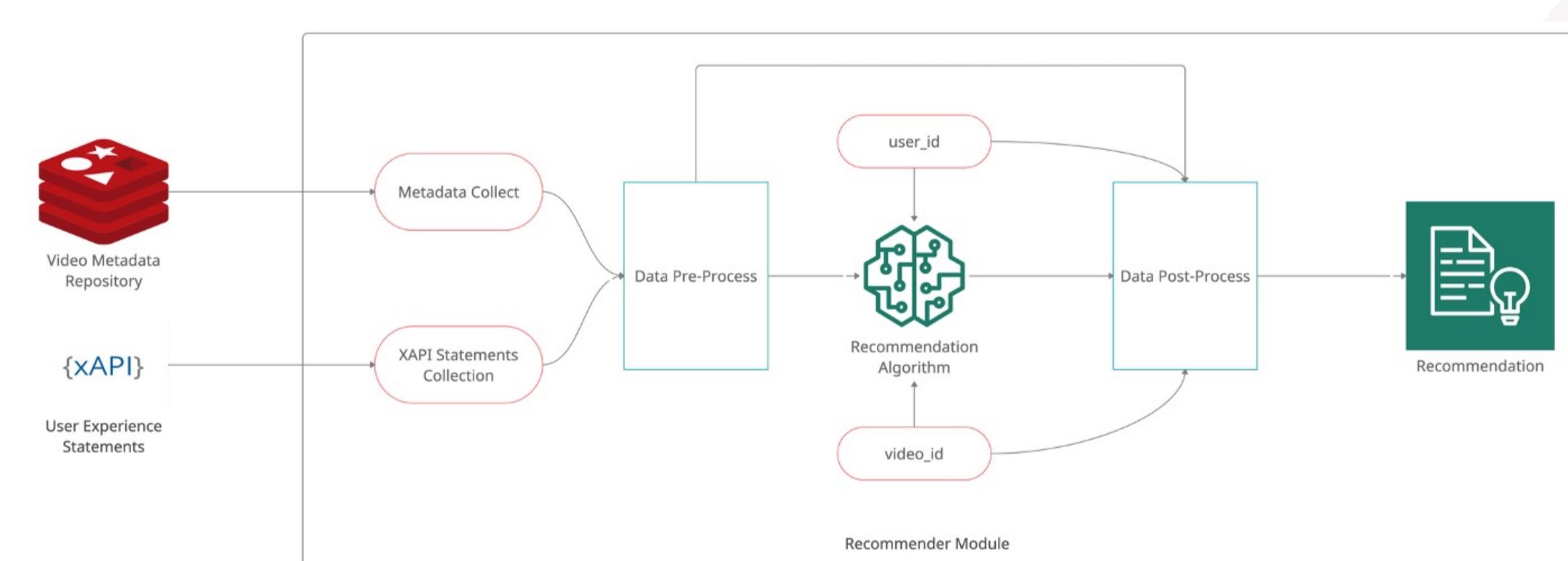


Fig. Simplified Flow of Algorithm Module

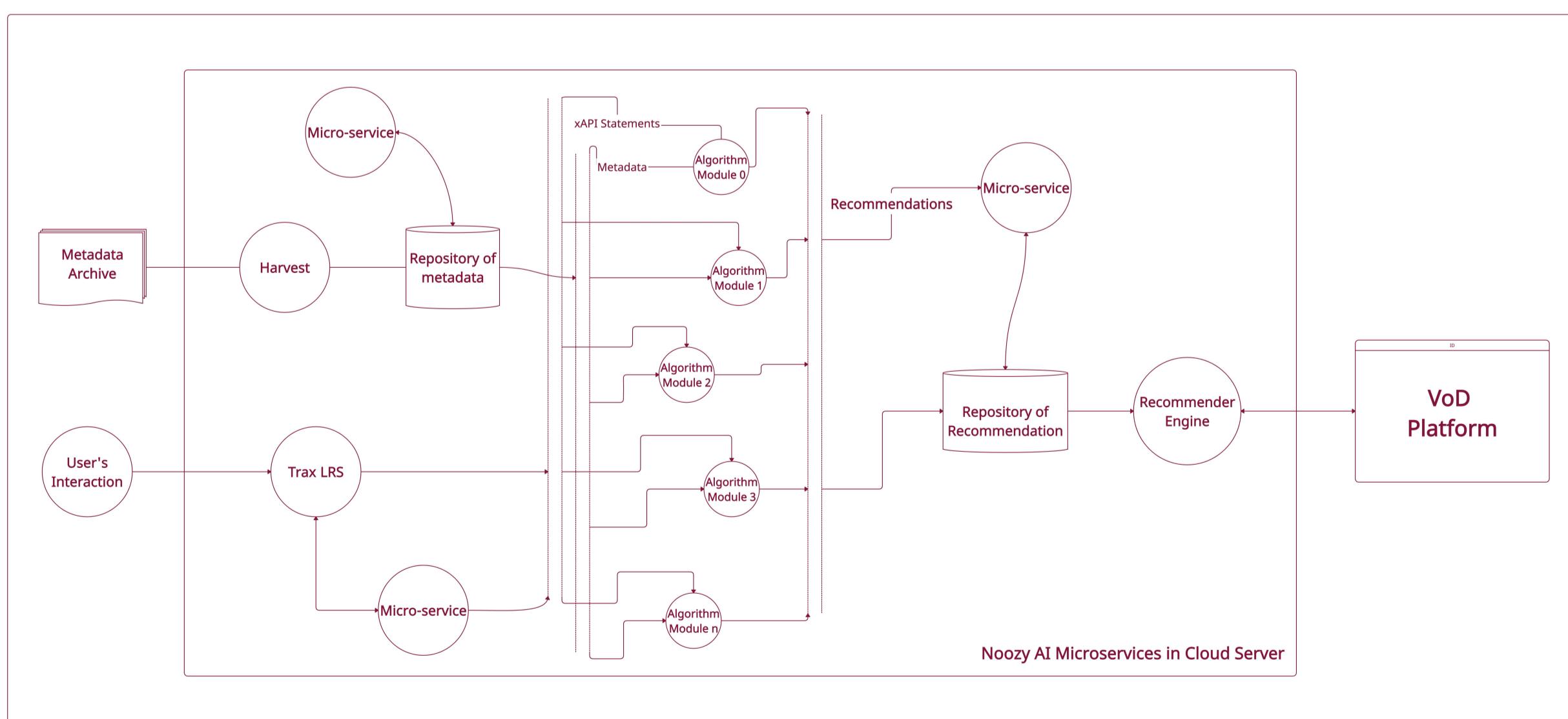


Fig. Architecture of Noozy AI

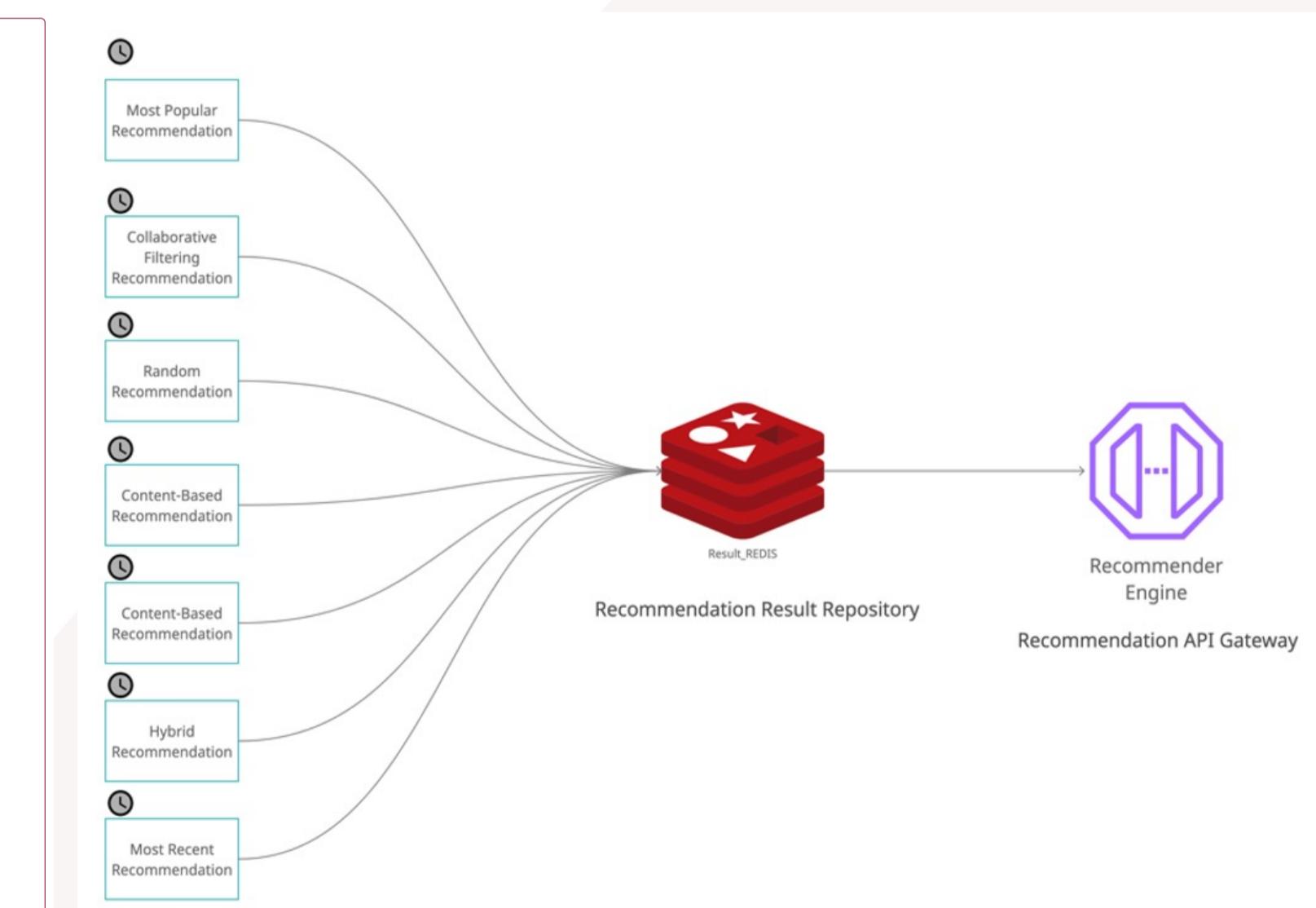


Fig. Algorithm Modules storing recommendations

Conclusion

The requirement of this project is to provide a dependable recommender system for Noozy TV from team BIRD, Loria. That being said, our contributions are (1) Designing a state-of-the-art architecture for Noozy AI, (2) Developing modular and dynamic recommender algorithm framework, (3) Engineering on a dependable system maintaining coding standards and principles, (4) Developing recommender algorithms for Noozy TV, (5) Test and evaluate the system for other basic and collaborative filtering video recommendations, (6) Contribute to set a sustainable software engineering team environment

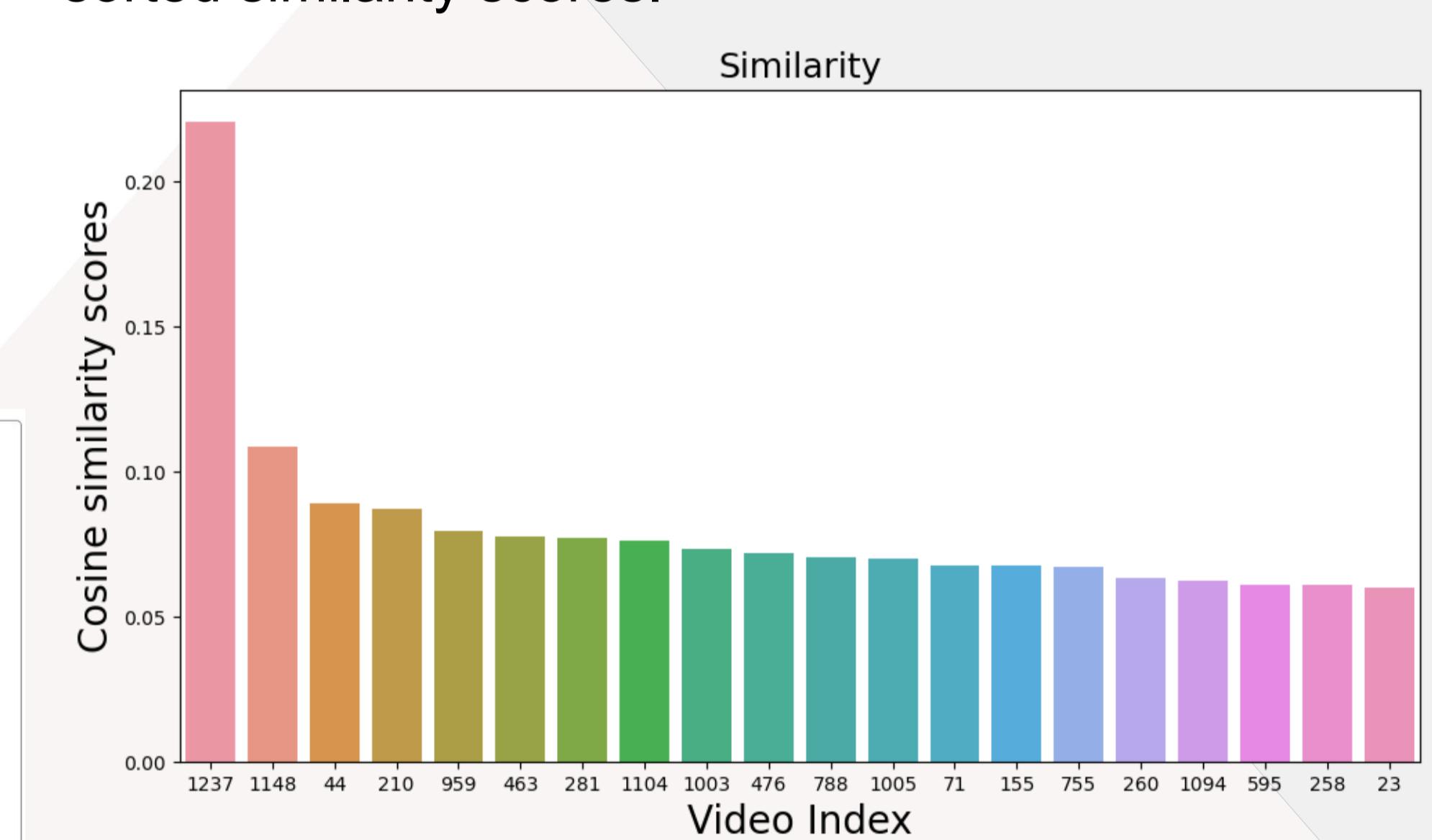
Objective

- Design the architecture of the recommender system
- Develop a dependable software, maintaining standard specifications and coding principles
- Ensuring a recommender algorithm framework with test facility and choices of algorithm models with different parameters
- Research scope with real data for case study on diversity and efficiency of the system

Content-Based Video Recommendation

The content-based recommender algorithm family can be branched into *ItemBased* and *UserBased*. Where *ItemBased* will take one item or video as reference to compute, and *UserBased* will take user's last seen N number of videos as reference. To branch out these two, we have genre or keyword-based and description-based results.

The framework recommends videos considering sorted similarity scores.



Plotting Content-Based Recommendation based on Video Description

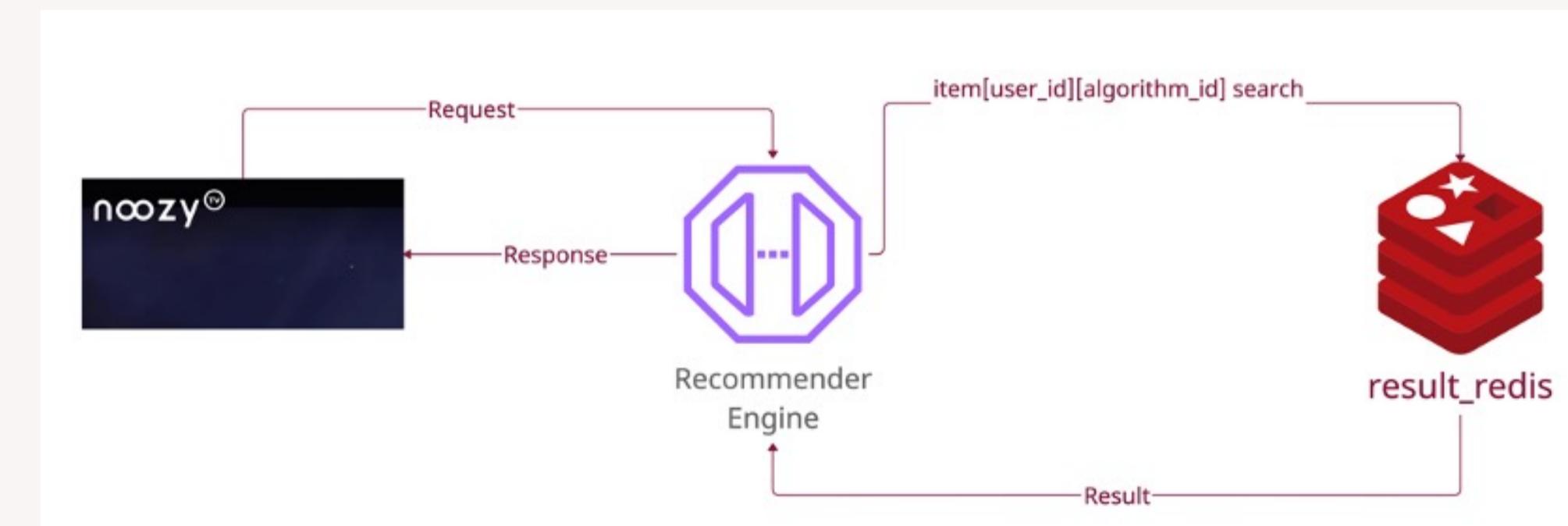


Fig. Recommending videos for Noozy TV

- Offline evaluation matrices – Similarity Scores
- Online evolution by Noozy TV editors
- Evaluation and ranking by users on the platform

Future Works

- Research on diversity with real usage data
- More hybrid recommendation
- Scheduled backup of repository
- Remote Logging for process analysis
- Dashboard web application for evaluation
- Strengthening AI ethics, data privacy and security on the system