



School of Computer Science
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Intelligent Open Source License Recommendation System

Technical Report

A Modern Approach to License Selection

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1 Introduction

In the modern era of collaborative software development, open source licenses serve as vital instruments that define the terms under which software can be used, modified, and distributed. Licenses ensure legal protection, promote transparency, and foster community trust. Despite their importance, many developers, especially those new to open source, struggle to choose a license that aligns with their values and project goals.

This project was created to simplify the license selection process for open source developers. It allows users to answer a few structured questions, then automatically suggests the most suitable license based on their answers. This reduces confusion, saves time, and ensures legal clarity for developers and users alike.

2 Installation Guide

This section provides step-by-step instructions for setting up the project locally.

2.1 Prerequisites

Before installing the project, ensure you have the following prerequisites installed:

- PHP 8.2 or higher
- Composer (PHP package manager)
- Node.js and npm
- Git

2.2 Installation Steps

Follow these steps to set up the project:

1. Clone the repository:

```
1 git clone https://github.com/gheith3/open-license-generator.git
2 cd open-license-generator
3
```

2. Install PHP dependencies:

```
1 composer install
2
```

3. Create environment file:

```
1 cp .env.example .env
2 php artisan key:generate
3
```

4. Configure the database in .env file:

```
1 DB_CONNECTION=sqlite
2 DB_DATABASE=/absolute/path/to/database.sqlite
3
```

5. Create the SQLite database:

```
1 touch database/database.sqlite
2 php artisan migrate
3
```

6. Seed the database with initial data:

```
1 php artisan db:seed
2
```

7. Install frontend dependencies:

```
1 npm install
2 npm run dev
3
```

8. Start the development server:

```
1 php artisan serve
2
```

After completing these steps, you can access the application at <http://localhost:8000>.

3 Project Objectives

- To simplify open source license selection through guided user input.
- To educate users on key licensing concerns (e.g., attribution, commercial use).
- To enable extensibility through a dynamic, database-driven architecture.
- To build the application entirely with open source tools and technologies.

4 System Architecture

4.1 Technologies Used

This application is developed using a modern open source stack:

- **Laravel 12:** Web framework for backend and routing.
- **Livewire:** Enables dynamic and reactive components.
- **Filament:** Admin panel and UI builder for Laravel.
- **SQLite:** Lightweight database for simplicity and portability.
- **PHP 8.2** and **Composer:** Programming language and dependency manager.
- **PHPUnit:** Automated testing framework.

4.2 Database Design

- **LicenseTemplate:** Stores metadata and full text of licenses.
- **Question:** Stores each decision-making prompt.
- **Option:** Possible answers to each question.
- **OptionLicenseScore:** Scores linking options to license recommendations.
- **GeneratedLicense:** User-specific license results.

5 Methodology

5.1 Question Design

The system uses a small set of high-impact questions to evaluate user intent. Each question corresponds to a major licensing principle:

1. Should the software be usable with minimal restrictions?
2. Should derivative works be open sourced?
3. Should users give credit to the original author?
4. Should commercial use be allowed?

Each option (typically "Yes" or "No") is scored for every license template. This score reflects how well the option aligns with the goals of that license.

5.2 Scoring Algorithm

The system uses a weighted scoring system:

Question	MIT	GPL	Apache
Minimal restrictions	3	1	2
Open source for derivatives	1	3	2
Attribution required	2	3	2
Allow commercial use	3	1	3

Table 5.1: License Scoring Matrix

5.3 System Flexibility and Extensibility

A unique feature of this system is its fully dynamic design. The system allows easy addition of new licenses and questions without modifying code:

- New licenses are added via the `LicenseTemplate` table.
- New questions and answer options are added via the `Question` and `Option` models.
- `OptionLicenseScore` links every answer to a license score.

6 Results and Screenshots

6.1 System Interface

License Generator

Fill in your project details and answer the questions.

★ **Project Name**
e.g. MyAwesomeApp

★ **Author**
e.g. John Doe

Do you require your software to be used freely with minimal restrictions?
-- Select --

Do you want derivative works to be open source?
-- Select --

Do you require explicit attribution in reused software?
-- Select --

Do you want to allow commercial use of your project?
-- Select --

License Preview
Your license will appear here after you generate it.

Apache License
Version 2.0, January 2004
<http://www.apache.org/licenses/>

Figure 6.1: Main Interface

License Generator

Fill in your project details and answer the questions.

★ **Project Name**
Shoping App

★ **Author**
Sami

Do you require your software to be used freely with minimal restrictions?
No

Do you want derivative works to be open source?
Yes

Do you require explicit attribution in reused software?
No

Do you want to allow commercial use of your project?
Yes

License Preview

GNU GENERAL PUBLIC LICENSE
Version 3, 29 June 2007

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Apache License
Version 2.0, January 2004
<http://www.apache.org/licenses/>

Figure 6.2: License Selection Process

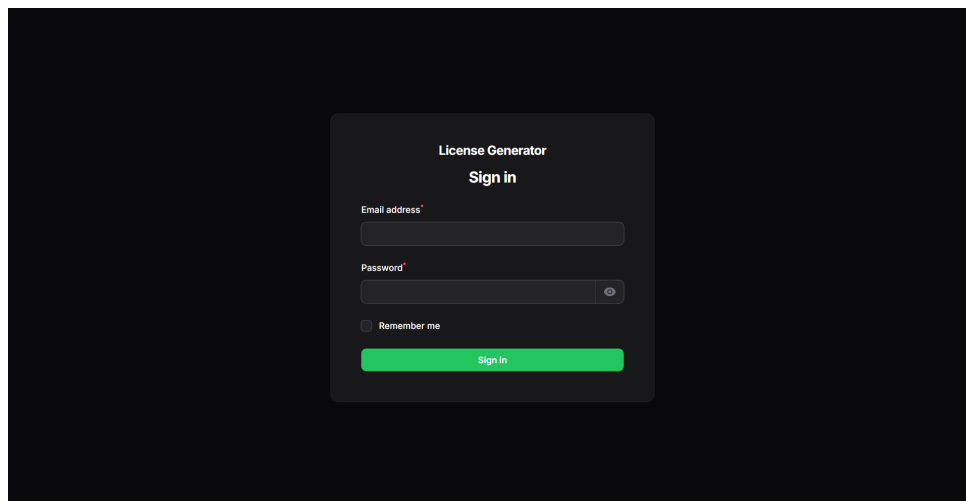


Figure 6.3: Question Interface

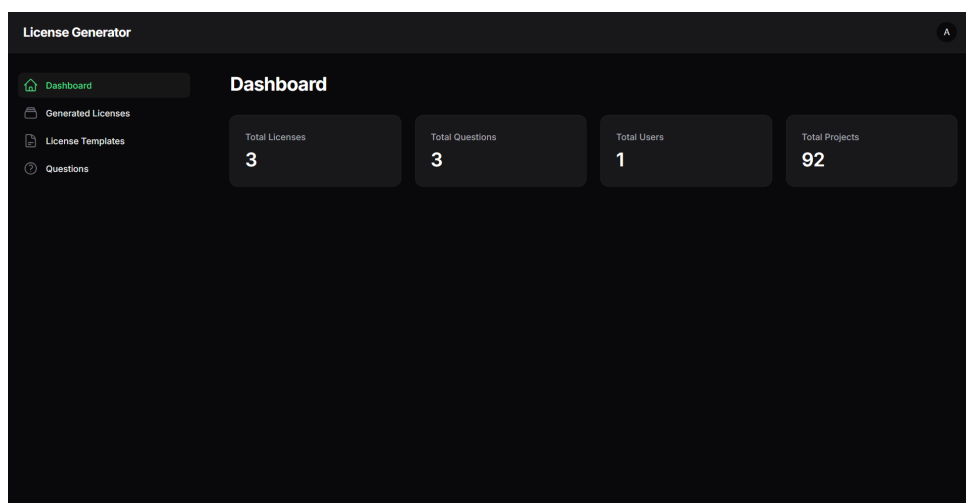


Figure 6.4: Admin Dashboard

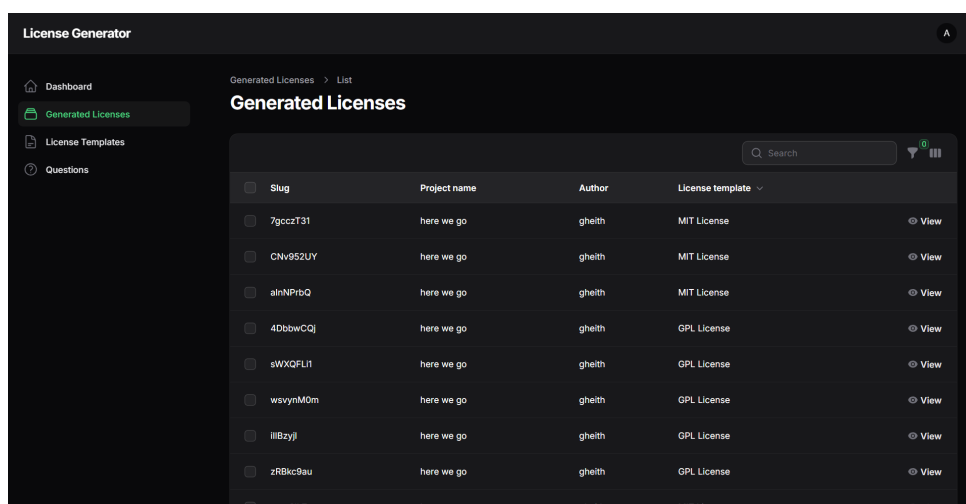


Figure 6.5: License Management

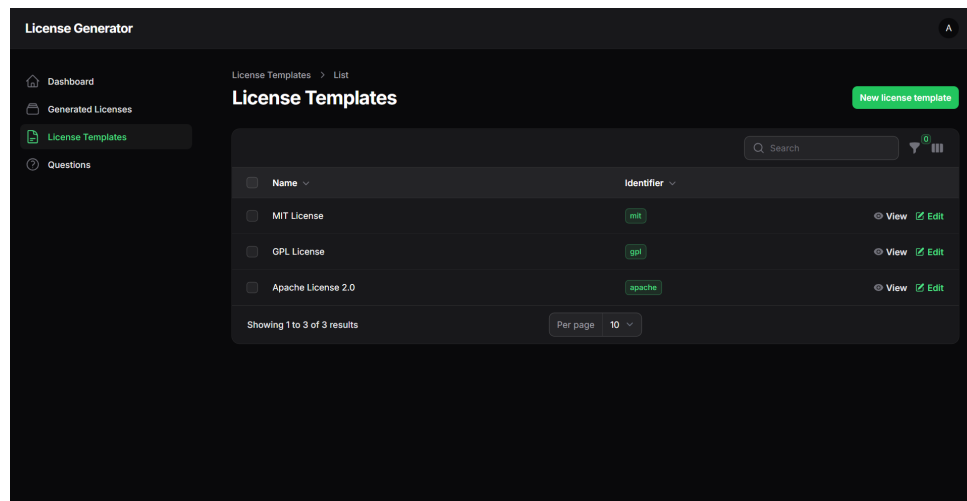


Figure 6.6: Question Management

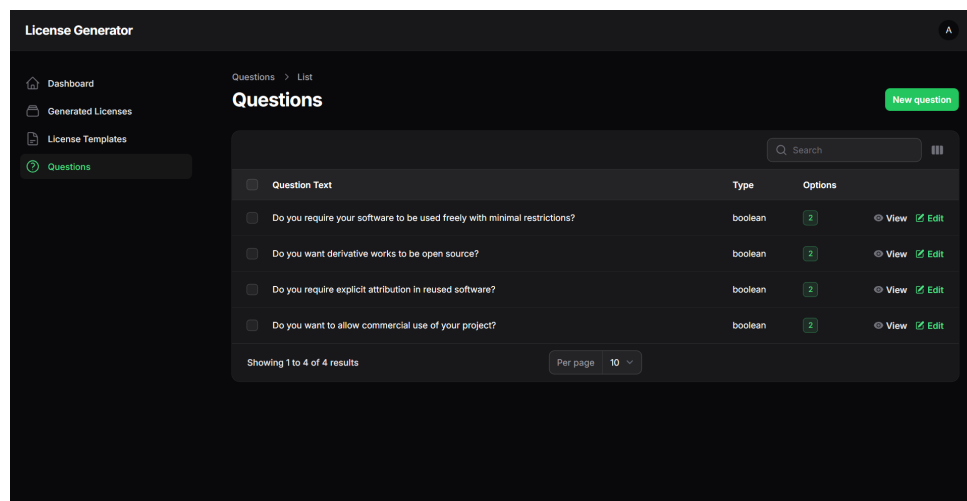


Figure 6.7: User Interface

License Generator

Dashboard

Generated Licenses

License Templates

Questions

Questions > View

View Question

Question Details

Question Text

Do you require your software to be used freely with minimal restrictions?

Type

boolean

Options

Label

Yes

Value

yes

License scores

3

License Scores

License

MIT License

Score

3

License

GPL License

Score

1

License

Apache License 2.0

Score

2

Label

No

Value

no

License scores

3

License Scores

License

MIT License

Score

1

License

GPL License

Score

3

License

Apache License 2.0

Score

2

Timestamps

Figure 6.8: Results Display

License Generator

Dashboard

Generated Licenses

License Templates

Questions

License Templates > View

View License Template

License Details

Name

MIT License

Identifier

mit

License Content

Content

MIT License

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Timestamps

Figure 6.9: System Overview

7 Conclusion

The Intelligent Open Source License Recommendation System is an effective and extensible tool designed to help developers make informed licensing decisions. Built entirely with open technologies, it aligns well with the ethos of open source itself. By transforming a complex legal decision into a guided process, the system lowers barriers for developers around the world and promotes sustainable open source practices.