

Instructions & Screenshots

1. Figure 1 shows a screenshot of the app immediately after it loads. The interface includes: A sidebar for configuring the Applicant Facts (Cumulative GPA, Monthly Family Income, Co-curricular Score, and Disciplinary Actions on Record) and the Rules Configuration (a text area to edit rules, followed by the Evaluate Eligibility button). There is also a main panel that introduces the Scholarship Advisory Rule-Based System (RBS), displays the Applicant Facts for Evaluation in JSON format, and provides an expander to view the Active Knowledge Base. This is followed by a message: Set applicant details in the sidebar and click Evaluate Eligibility to run the advisory system. So, users may explore by using different parameters and see the results.

The screenshot displays the Scholarship Advisory Rule-Based System (RBS) application. On the left is a sidebar with two main sections: 'Applicant Facts' and 'Rules Configuration'. The 'Applicant Facts' section contains four input fields: 'Cumulative GPA (CGPA)' with a value of 3.50, 'Monthly Family Income (RM)' with a value of 6500, 'Co-curricular Score (0-100)' with a value of 75, and 'Disciplinary Actions on Record' with a value of 0. The 'Rules Configuration' section includes a text area for editing rules and a red 'Evaluate Eligibility' button. The main panel on the right features a header 'Scholarship Advisory Rule-Based System' with a brief description. Below this, it shows 'Applicant Facts for Evaluation' as a JSON object:

```
{  "cgpa" : 3.5,  "family_income" : 6500,  "co_curricular_score" : 75,  "disciplinary_actions" : 0}
```

. It also has an 'Active Knowledge Base' section with a 'Show all rules (Sorted by Priority)' button. A blue message box at the bottom of the main panel states: 'Set applicant details in the sidebar and click Evaluate Eligibility to run the advisory system.'

Figure 1

2. Figure 2 shows the screenshot of the app right after the user clicks Evaluate Eligibility, which demonstrates the successful execution of the Rule-Based System’s inference engine. This result shows the final decision, which is divided into two columns:
- **Decision (Left Column):** This displays the resulting status, which in this case is AWARD PARTIAL (indicated by the green badge) with the accompanying Reason: Good academic & involvement record with moderate need.
 - **Matched Rules (by priority) (Right Column):** This identifies the specific rule that dictated the final decision. The Best Match is “Good candidate partial scholarship” with a Priority: 80.

The screenshot displays the 'Scholarship Advisory Rule-Based System' interface. On the left, the 'Applicant Facts' section includes input fields for Cumulative GPA (CGPA) set to 3.50, Monthly Family Income (BIM) set to 6500, Co-curricular Score (P-100) set to 75, and Disciplinary Actions on Record set to 0. Below this is the 'Rules Configuration' section, which shows a JSON rule for a 'Top merit candidate' with a priority of 100 and conditions for CGPA >= 3.7. A red 'Evaluate Eligibility' button is at the bottom left. The main area on the right is titled 'Scholarship Advisory Rule-Based System' and includes a description of the system. It shows 'Applicant Facts for Evaluation' as a JSON object with the input values. Below that is the 'Active Knowledge Base' section with a 'Show all rules (Sorted by Priority)' button. The 'Decision' section on the right shows a green badge for 'AWARD PARTIAL' and the reason: 'Good academic & involvement record with moderate need'. The 'Matched Rules (by priority)' section shows the 'Best Match: Good candidate partial scholarship | Priority: 80' and a 'Show All Matched Rules and Details' button.

Applicant Facts

Cumulative GPA (CGPA): 3.50

Monthly Family Income (BIM): 6500

Co-curricular Score (P-100): 75

Disciplinary Actions on Record: 0

Rules Configuration

The system runs on the mandated rule set from the lab case study.

Edit rules here (Optional)

```
{
  "name": "Top merit candidate",
  "priority": 100,
  "conditions": [
    {
      "cgpa": ">=",
      "value": 3.7
    }
  ]
}
```

Evaluate Eligibility

Scholarship Advisory Rule-Based System

A transparent decision support tool based on the university's criteria for scholarship eligibility.

This application is a **Rule-Based System (RBS)** designed to automate transparent scholarship eligibility decisions. It evaluates applicant facts (CGPA, income, co-curricular score, and disciplinary actions) against a prioritized Knowledge Base of IF-THEN rules to instantly determine the appropriate decision (AWARD FULL/PARTIAL, REJECT, or REVIEW).

Applicant Facts for Evaluation

```
{
  "cgpa": 3.5,
  "family_income": 6500,
  "co_curricular_score": 75,
  "disciplinary_actions": 0
}
```

Active Knowledge Base

Show all rules (Sorted by Priority)

Decision

AWARD PARTIAL

Reason: Good academic & involvement record with moderate need

Matched Rules (by priority)

Best Match: Good candidate partial scholarship | Priority: 80

Chosen Action: AWARD PARTIAL

Show All Matched Rules and Details

Figure 2

3. Figure 3 shows that by clicking the “Show All Matched Rules and Details”, users can further inspect the reasoning: The system matches the “Good candidate partial scholarship” rule because the applicant’s input facts meet all of its conditions shown in the expander.

Matched Rules (by priority)

Best Match: Good candidate partial scholarship | Priority: 80

Chosen Action: AWARD PARTIAL

▼ Show All Matched Rules and Details

1. Good candidate partial scholarship | Priority=80

Action: {'decision': 'AWARD PARTIAL', 'reason': 'Good academic & involvement record with moderate need'}

Conditions

- `cgpa ≥ 3.3`
- `co_curricular_score ≥ 60`
- `family_income ≤ 12000`
- `disciplinary_actions ≤ 1`

Figure 3

- Figure 4 shows the Active Knowledge Base content, specifically detailing the rules loaded into the system. It indicates that the knowledge base is sorted by Priority, with the highest priority rule, “Top merit candidate” (Priority 100), displayed first. The expander illustrates the complete JSON structure of this rule, including the conditions and the defined action.

Active Knowledge Base

▼ Show all rules (Sorted by Priority)

```
[
  {
    "name": "Top merit candidate",
    "priority": 100,
    "conditions": [
      [
        "cgpa",
        ">=",
        3.7
      ],
      [
        "co_curricular_score",
        ">=",
        80
      ],
      [
        "family_income",
        "<=",
        8000
      ],
      [
        "disciplinary_actions",
        "==",
        0
      ]
    ],
    "action": {
      "decision": "AWARD FULL",
      "reason": "Excellent academic & co-curricular performance, with acceptable need"
    }
  },
  {
    "name": "Low CGPA not eligible",
    "priority": 95,
    "conditions": [
      [
        "cgpa",
        "<",

```

Figure 4