

<b>Exp No: 8</b> <b>Date:</b>	<b>Mini Project: Framework based Examination of Road Accidents using KDD</b>
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## Aim

To design and implement a **KDD-based analytical framework** for examining road accident data in order to extract **predictive and actionable insights** that can help improve **road safety** by identifying accident-prone areas, influential factors (like time, weather, and location), and high-risk groups.

## Algorithm / Methodology

### Step 1: Data Selection

- Collect datasets from multiple reliable sources such as government accident records, open data portals, and traffic sensor data.
- Choose relevant attributes such as date, time, location, weather, vehicle type, and severity.

### Step 2: Data Preprocessing

- Handle missing or incomplete data (e.g., replace with mean/mode or remove noisy entries).
- Normalize and clean the dataset to ensure consistency.
- Remove duplicate and irrelevant records.

### Step 3: Data Transformation

- Convert raw data into structured form suitable for mining.
- Aggregate and engineer new features (e.g., accident frequency per location, severity index).
- Encode categorical data (e.g., weather = sunny, rainy, foggy).

### Step 4: Data Mining

- Apply **Clustering** (e.g., K-Means) to group similar accident patterns.
- Use **Association Rule Mining** (e.g., Apriori algorithm) to find relationships like “If rainy + nighttime → high severity.”
- Apply **Classification** (e.g., Decision Tree, Random Forest) to predict accident severity.

### **Step 5: Pattern Evaluation**

- Evaluate mined patterns for relevance, accuracy, and usefulness.
- Rank insights based on confidence and support values (for association rules) or accuracy (for classification).

### **Step 6: Knowledge Presentation**

- Visualize results using dashboards, bar charts, heatmaps, or maps.
- Present actionable findings for policymakers — e.g., hotspot zones, risky time periods, or weather impacts.

### **CODE:**

```
<!DOCTYPE html>

<html lang="en">

<head>

  <meta charset="UTF-8">

  <meta name="viewport" content="width=device-width, initial-scale=1.0">

  <title>AccidentInsight - Road Safety Analytics</title>

  <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/6.4.0/css/all.min.css">

  <script src="https://cdn.jsdelivr.net/npm/chart.js"></script>

  <style>

    * {
```

```
margin: 0;  
padding: 0;  
box-sizing: border-box;  
font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif;  
}
```

```
:root {  
    --primary: #2c3e50;  
    --primary-light: #34495e;  
    --primary-dark: #1a252f;  
    --secondary: #e74c3c;  
    --accent: #3498db;  
    --light: #ecf0f1;  
    --dark: #2c3e50;  
    --gray: #7f8c8d;  
    --white: #ffffff;  
    --success: #27ae60;  
    --warning: #f39c12;  
    --shadow: 0 4px 6px rgba(0, 0, 0, 0.1);  
    --transition: all 0.3s ease;  
}
```

body {

```
background: linear-gradient(135deg, #667eea 0%, #764ba2 100%);  
min-height: 100vh;  
display: flex;  
justify-content: center;  
align-items: center;  
padding: 20px;  
}
```

```
.container {  
width: 100%;  
max-width: 1400px;  
background-color: var(--white);  
border-radius: 15px;  
box-shadow: var(--shadow);  
overflow: hidden;  
transition: var(--transition);  
}
```

```
.page {  
display: none;  
padding: 30px;  
animation: fadeIn 0.5s ease;  
}
```

```
.active {  
    display: block;  
}  
  
@keyframes fadeIn {  
    from { opacity: 0; transform: translateY(10px); }  
    to { opacity: 1; transform: translateY(0); }  
}  
  
/* Login Page Styles */  
  
.login-container {  
    display: flex;  
    height: 600px;  
}  
  
.login-left {  
    flex: 1;  
    background: linear-gradient(135deg, var(--primary), var(--primary-dark));  
    color: var(--white);  
    padding: 50px;  
    display: flex;  
    flex-direction: column;
```

```
    justify-content: center;  
}  
  
}
```

```
.login-left h1 {  
    font-size: 36px;  
    margin-bottom: 20px;  
}
```

```
.login-left p {  
    font-size: 18px;  
    line-height: 1.6;  
    margin-bottom: 30px;  
}
```

```
.kdd-steps {  
    margin-top: 30px;  
}
```

```
.kdd-step {  
    display: flex;  
    align-items: center;  
    margin-bottom: 15px;  
}
```

```
.step-number {  
    width: 30px;  
    height: 30px;  
    background-color: var(--accent);  
    border-radius: 50%;  
    display: flex;  
    align-items: center;  
    justify-content: center;  
    margin-right: 15px;  
    font-weight: bold;  
}
```

```
.login-right {  
    flex: 1;  
    display: flex;  
    justify-content: center;  
    align-items: center;  
    padding: 40px;  
}
```

```
.login-form {  
    width: 100%;
```

```
.form-group label {  
  display: block;  
  margin-bottom: 8px;  
  color: var(--dark);  
  font-weight: 500;  
}  
  
.form-control {  
  width: 100%;  
  padding: 12px 15px;  
  border: 1px solid #ddd;  
  border-radius: 5px;  
  font-size: 16px;  
  transition: var(--transition);  
}  
  
.form-control:focus {  
  border-color: var(--primary);  
  outline: none;  
  box-shadow: 0 0 0 2px rgba(44, 62, 80, 0.2);  
}
```

```
.btn {  
    display: inline-block;  
    padding: 12px 25px;  
    background-color: var(--primary);  
    color: var(--white);  
    border: none;  
    border-radius: 5px;  
    font-size: 16px;  
    font-weight: 600;  
    cursor: pointer;  
    transition: var(--transition);  
    text-align: center;  
}  
  
.
```

```
.btn:hover {  
    background-color: var(--primary-dark);  
    transform: translateY(-2px);  
}  
  
.
```

```
.btn-block {  
    display: block;  
    width: 100%;  
}  
  
.
```

```
    color: var(--primary);  
    text-decoration: none;  
    font-weight: 500;  
}  
  
/* Dashboard Styles */  
.dashboard-header {  
    display: flex;  
    justify-content: space-between;  
    align-items: center;  
    margin-bottom: 30px;  
    padding-bottom: 15px;  
    border-bottom: 1px solid #eee;  
}  
  
.dashboard-header h1 {  
    color: var(--primary-dark);  
}  
  
.user-info {  
    display: flex;  
    align-items: center;
```

```
}

.user-info i {
    font-size: 24px;
    color: var(--primary);
    margin-right: 10px;
}

.stats-container {
    display: grid;
    grid-template-columns: repeat(auto-fit, minmax(250px, 1fr));
    gap: 20px;
    margin-bottom: 30px;
}

.stat-card {
    background-color: var(--white);
    padding: 25px;
    border-radius: 10px;
    box-shadow: var(--shadow);
    transition: var(--transition);
    border-left: 5px solid var(--accent);
}
```

```
.analysis-tab.active {  
    color: var(--primary);  
    border-bottom: 3px solid var(--primary);  
}  
  
}
```

```
.analysis-content {  
    display: none;  
}  
  
}
```

```
.analysis-content.active {  
    display: block;  
}  
  
}
```

```
.data-upload {  
    background-color: var(--light);  
    padding: 30px;  
    border-radius: 10px;  
    margin-bottom: 30px;  
}  
  
}
```

```
.upload-area {
```

```
.kdd-process {  
    background-color: var(--white);  
    border-radius: 10px;  
    padding: 25px;  
    box-shadow: var(--shadow);  
    margin-bottom: 30px;  
}
```

```
.process-steps {  
    display: flex;  
    justify-content: space-between;  
    margin-top: 20px;  
    position: relative;  
}
```

```
.process-steps::before {  
    content: " ";  
    position: absolute;  
    top: 30px;  
    left: 0;  
    right: 0;  
    height: 2px;
```

```
background-color: #E0E0E0;  
z-index: 1;  
}
```

```
.process-step {  
    text-align: center;  
    position: relative;  
    z-index: 2;  
    flex: 1;  
}
```

```
.step-icon {  
    width: 60px;  
    height: 60px;  
    background-color: var(--primary);  
    border-radius: 50%;  
    display: flex;  
    align-items: center;  
    justify-content: center;  
    margin: 0 auto 15px;  
    color: var(--white);  
    font-size: 24px;  
}
```

```
.process-step.active .step-icon {  
    background-color: var(--accent);  
}  
  
.process-step.completed .step-icon {  
    background-color: var(--success);  
}  
  
.step-title {  
    font-weight: 600;  
    margin-bottom: 5px;  
}  
  
.step-desc {  
    font-size: 12px;  
    color: var(--gray);  
}  
  
.results-container {  
    display: grid;  
    grid-template-columns: 2fr 1fr;  
    gap: 20px;
```

```
}

@media (max-width: 992px) {

    .results-container {
        grid-template-columns: 1fr;
    }
}

.insights-panel {

    background-color: var(--white);
    border-radius: 10px;
    padding: 25px;
    box-shadow: var(--shadow);
}

.insights-panel h2 {

    color: var(--primary-dark);
    margin-bottom: 20px;
}

.insight-item {

    padding: 15px;
    border-left: 4px solid var(--accent);
}
```

```
.factor-item:last-child {  
    border-bottom: none;  
}  
  
.factor-name {  
    font-weight: 500;  
}  
  
.factor-impact {  
    color: var(--secondary);  
    font-weight: 600;  
}  
  
/* Reports Page Styles */  
.filters-panel {  
    background-color: var(--white);  
    border-radius: 10px;  
    padding: 20px;  
    box-shadow: var(--shadow);  
    margin-bottom: 30px;  
}
```

```
@media (max-width: 768px) {  
    .login-container {  
        flex-direction: column;  
        height: auto;  
    }  
  
    .dashboard-header {  
        flex-direction: column;  
        align-items: flex-start;  
    }  
  
    .user-info {  
        margin-top: 15px;  
    }  
  
    .navigation {  
        flex-direction: column;  
        gap: 10px;  
    }  
  
    .btn {  
        width: 100%;  
    }  
}
```

```
.process-steps {  
    flex-direction: column;  
    gap: 20px;  
}  
  
.process-steps::before {  
    display: none;  
}  
}  
  
</style>  
</head>  
  
<body>  
    <div class="container">  
        <!-- Login Page -->  
        <div id="login-page" class="page active">  
            <div class="login-container">  
                <div class="login-left">  
                    <h1>AccidentInsight Analytics</h1>  
                    <p>Leveraging the KDD methodology to extract meaningful insights from  
                    accident data, aiming to make our roads safer and our analysis more predictive.</p>  
                </div>  
                <div class="login-right">  
                    <h2>Data Preprocessing</h2>  
                    <ul>  
                        <li>1. Data Cleaning</li>  
                        <li>2. Feature Selection</li>  
                        <li>3. Dimensionality Reduction</li>  
                    </ul>  
                </div>  
            </div>  
        </div>  
    </div>  
    <div class="kdd-steps">  
        <ol>  
            <li>1. Data Collection</li>  
            <li>2. Data Preprocessing</li>  
            <li>3. Feature Extraction</li>  
            <li>4. Model Training</li>  
            <li>5. Model Evaluation</li>  
            <li>6. Model Deployment</li>  
        </ol>  
    </div>  
    <div class="kdd-diagram">  
        <img alt="KDD Methodology Diagram showing a flow from Data Collection to Model Deployment through Data Preprocessing, Feature Extraction, and Model Training." data-bbox="150 750 850 900"/>  
    </div>  
    <div class="kdd-explanation">  
        <p>The KDD methodology is a process for extracting useful knowledge from large amounts of data. It consists of six main steps:  
        1. Data Collection: Gathering raw data from various sources.  
        2. Data Preprocessing: Cleaning and transforming the data into a usable format.  
        3. Feature Extraction: Identifying the most relevant features for the analysis.  
        4. Model Training: Creating a machine learning model to learn patterns from the data.  
        5. Model Evaluation: Assessing the performance of the model to ensure it is accurate.  
        6. Model Deployment: Implementing the model to make predictions on new data.  
        This diagram illustrates the sequential nature of the KDD process, with each step building upon the previous one to produce a final deployed model.</p>  
    </div>  
    <div class="kdd-questions">  
        <ol>  
            <li>What is the first step in the KDD methodology?</li>  
            <li>How does data preprocessing help in preparing data for analysis?</li>  
            <li>What is feature extraction and why is it important?</li>  
            <li>What is the role of model training in the KDD process?</li>  
            <li>How is the performance of a model evaluated?</li>  
            <li>What is the final step in the KDD methodology?</li>  
        </ol>  
    </div>  
    <div class="kdd-answers">  
        <ol>  
            <li>The first step in the KDD methodology is Data Collection, where raw data is gathered from various sources.  
            <li>Data preprocessing involves cleaning and transforming the data into a usable format, which helps in removing noise and handling missing values.  
            <li>Feature extraction identifies the most relevant features for the analysis, which helps in reducing dimensionality and improving model performance.  
            <li>Model training creates a machine learning model to learn patterns from the data.  
            <li>The performance of a model is evaluated using various metrics such as accuracy, precision, recall, and F1 score.  
            <li>The final step in the KDD methodology is Model Deployment, where the trained model is implemented to make predictions on new data.  
        </ol>  
    </div>  
    <div class="kdd-future">  
        <p>The future of KDD lies in the development of more advanced machine learning models and the integration of big data technologies. As more data becomes available, there is a need for more efficient and accurate data processing and analysis techniques. Additionally, the use of deep learning and neural networks has shown promise in handling complex data structures and extracting meaningful insights.  
        </p>  
    </div>  
    <div class="kdd-conclusion">  
        <p>In conclusion, the KDD methodology is a powerful tool for extracting meaningful insights from large amounts of data. By following a systematic process, it ensures that the data is properly prepared, relevant features are identified, and accurate models are created. The KDD process is not just limited to accident data, but can be applied to a wide range of domains to improve decision-making and drive innovation.  
        </p>  
    </div>  
    <div class="kdd-questions2">  
        <ol>  
            <li>What is the difference between KDD and machine learning?</li>  
            <li>How does KDD differ from traditional data mining?</li>  
            <li>What are the challenges in applying KDD to real-world datasets?</li>  
            <li>How can KDD be used to improve safety in road accidents?</li>  
            <li>What are some common applications of KDD in other fields?</li>  
        </ol>  
    </div>  
    <div class="kdd-answers2">  
        <ol>  
            <li>KDD and machine learning are related but distinct fields. KDD focuses on the entire process of extracting knowledge from data, while machine learning is a specific subset of KDD that deals with learning patterns from data.  
            <li>Traditional data mining focuses on extracting patterns from structured data, while KDD deals with unstructured and semi-structured data.  
            <li>Challenges in KDD include dealing with large volumes of data, handling missing or noisy data, and identifying the most relevant features for analysis.  
            <li>KDD can be used to analyze accident data to identify patterns and trends, which can help in developing safer roads and improving accident prevention measures.  
            <li>KDD has applications in various fields such as healthcare, finance, and retail, where it can be used to extract meaningful insights from large datasets.  
        </ol>  
    </div>  
    <div class="kdd-future2">  
        <p>The future of KDD is likely to involve the integration of machine learning and deep learning techniques to handle larger and more complex datasets. Additionally, the use of cloud computing and big data technologies will enable KDD to process and analyze even larger amounts of data in a timely manner.  
        </p>  
    </div>  
    <div class="kdd-conclusion2">  
        <p>In conclusion, KDD is a valuable methodology for extracting meaningful insights from large amounts of data. By following a systematic process, it ensures that the data is properly prepared, relevant features are identified, and accurate models are created. The KDD process is not just limited to accident data, but can be applied to a wide range of domains to improve decision-making and drive innovation.  
        </p>  
    </div>  
}
```

```
<div class="kdd-step">

    <div class="step-number">1</div>

    <div>Data Selection & Integration</div>

</div>

<div class="kdd-step">

    <div class="step-number">2</div>

    <div>Data Preprocessing & Cleaning</div>

</div>

<div class="kdd-step">

    <div class="step-number">3</div>

    <div>Data Transformation</div>

</div>

<div class="kdd-step">

    <div class="step-number">4</div>

    <div>Data Mining</div>

</div>

<div class="kdd-step">

    <div class="step-number">5</div>

    <div>Pattern Evaluation</div>

</div>

</div>

</div>

<div class="login-right">
```

```
<div class="login-form">

    <div class="logo">
        <i class="fas fa-car-crash"></i>
        <h1>AccidentInsight</h1>
    </div>

    <div class="form-group">
        <label for="username">Username</label>
        <input type="text" id="username" class="form-control" placeholder="Enter your username">
    </div>

    <div class="form-group">
        <label for="password">Password</label>
        <input type="password" id="password" class="form-control" placeholder="Enter your password">
    </div>

    <button id="login-btn" class="btn btn-block">Login</button>

    <div class="signup-link">
        Don't have an account? <a href="#">Request access</a>
    </div>
</div>
</div>
```

```
<!-- Dashboard Page -->

<div id="dashboard-page" class="page">

    <div class="chart-card">

        <h2>Monthly Accident Trends</h2>

        <div class="chart-placeholder">

            <canvas id="monthlyTrendsChart"></canvas>

        </div>

    </div>

    <div class="chart-card">

        <h2>Contributing Factors</h2>

        <div class="chart-placeholder">

            <canvas id="factorsChart"></canvas>

        </div>

    </div>

</div>

<div class="navigation">

    <button id="logout-btn" class="btn">

        <i class="fas fa-sign-out-alt"></i> Logout

    </button>

    <button id="to-analysis-btn" class="btn btn-accent">

        KDD Analysis <i class="fas fa-arrow-right"></i>

    </button>


```

```
<i class="fas fa-database"></i>

</div>

<div class="step-title">Data Selection</div>

<div class="step-desc">Identify relevant data sources</div>

</div>

<div class="process-step completed">

<div class="step-icon">

<i class="fas fa-broom"></i>

</div>

<div class="step-title">Preprocessing</div>

<div class="step-desc">Clean and prepare data</div>

</div>

<div class="process-step active">

<div class="step-icon">

<i class="fas fa-exchange-alt"></i>

</div>

<div class="step-title">Transformation</div>

<div class="step-desc">Transform to suitable format</div>

</div>

<div class="process-step">

<div class="step-icon">

<i class="fas fa-digging"></i>

</div>
```

```
<div class="step-title">Data Mining</div>

<div class="step-desc">Extract patterns</div>

</div>

<div class="process-step">

<div class="step-icon">

<i class="fas fa-chart-bar"></i>

</div>

<div class="step-title">Evaluation</div>

<div class="step-desc">Interpret and evaluate</div>

</div>

</div>

</div>

<div class="chart-card">

<h2>Data Quality Metrics</h2>

<div class="chart-placeholder">

<canvas id="qualityChart"></canvas>

</div>

<div class="factor-item">

<span class="factor-name">Time of Day</span>

<span class="factor-impact">Medium</span>

</div>

<div class="factor-item">
```

```
<span class="factor-name">Vehicle Condition</span>

<span class="factor-impact">Low</span>

</div>

</div>

</div>

<div class="chart-card" style="margin-top: 20px;">

<h2>Accident Hotspots</h2>

<div class="chart-placeholder">

<div style="padding: 20px; text-align: center;">

<i class="fas fa-map-marked-alt" style="font-size: 50px; color: #7f8c8d; margin-bottom: 15px;"></i>

<p>Interactive map showing accident hotspots based on KDD analysis</p>

</div>

</div>

</div>

</div>

<div class="navigation">

<button id="to-dashboard-btn" class="btn">

<i class="fas fa-arrow-left"></i> Back to Dashboard

</button>

<button id="to-reports-btn" class="btn btn-accent">
```

```
<option>Prevention Strategies</option>

</select>

</div>

<div class="form-group">

    <label for="date-generated">Date Generated</label>

    <select id="date-generated" class="form-control">

        <option>Any Date</option>

        <option>Last 7 days</option>

        <option>Last 30 days</option>

        <option>Last 6 months</option>

    </select>

</div>

<div class="form-group">

    <label for="report-status">Status</label>

    <select id="report-status" class="form-control">

        <option>All Status</option>

        <option>Completed</option>

        <option>In Progress</option>

        <option>Scheduled</option>

    </select>

</div>

</div>
```

```
</button>

<div class="report-meta">

    <span>Generated: 1 month ago</span>

    <span>PDF, 2.7 MB</span>

</div>

</div>

<div class="report-card">

    <h3>Pedestrian Safety Report</h3>

    <p>Focused analysis on accidents involving pedestrians with recommendations for infrastructure improvements.</p>

    <button class="btn btn-accent" style="padding: 8px 15px;">

        <i class="fas fa-download"></i> Download

    </button>

    <div class="report-meta">

        <span>Generated: 1 month ago</span>

        <span>PDF, 2.2 MB</span>

    </div>

</div>

<div class="report-card">

    <h3>Prevention Strategy Evaluation</h3>

    <p>Assessment of implemented safety measures and their effectiveness in reducing accident rates.</p>

    <button class="btn btn-accent" style="padding: 8px 15px;">

        <i class="fas fa-download"></i> Download

    </button>


```

```

const analysisPage = document.getElementById('analysis-page');

const reportsPage = document.getElementById('reports-page');

const loginBtn = document.getElementById('login-btn');

const logoutBtn = document.getElementById('logout-btn');

const toAnalysisBtn = document.getElementById('to-analysis-btn');

const toDashboardBtn = document.getElementById('to-dashboard-btn');

const toReportsBtn = document.getElementById('to-reports-btn');

const toAnalysisFromReportsBtn = document.getElementById('to-analysis-from-reports');

const usernameInput = document.getElementById('username');

const userDisplay = document.getElementById('user-display');

const analysisTabs = document.querySelectorAll('.analysis-tab');

const analysisContents = document.querySelectorAll('.analysis-content');

const fileInput = document.getElementById('file-input');

const uploadArea = document.getElementById('upload-area');

// Event Listeners

loginBtn.addEventListener('click', login);

logoutBtn.addEventListener('click', logout);

```

```

toAnalysisBtn.addEventListener('click', () => showPage(analysisPage));

toDashboardBtn.addEventListener('click', () => showPage(dashboardPage));

toReportsBtn.addEventListener('click', () => showPage(reportsPage));

toAnalysisFromReportsBtn.addEventListener('click', () => showPage(analysisPage));


analysisTabs.forEach(tab => {

    tab.addEventListener('click', () => {

        const tabId = tab.getAttribute('data-tab');

        // Update active tab

        analysisTabs.forEach(t => t.classList.remove('active'));

        tab.classList.add('active');

        // Show corresponding content

        analysisContents.forEach(content => {

            content.classList.remove('active');

            if (content.id === tabId) {

                content.classList.add('active');

            }

        });

    });

});

});

```

```

    data: {

        labels: ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec'],

        datasets: [{

            label: 'Accidents',

            data: [65, 59, 80, 81, 56, 55, 70, 75, 60, 82, 78, 85],

            borderColor: '#e74c3c',

            tension: 0.3,

            fill: false

        }]

    },

    options: {

        responsive: true

    }

});


```

```

// Factors Chart

const factorsCtx = document.getElementById('factorsChart').getContext('2d');

new Chart(factorsCtx, {

    type: 'polarArea',

    data: {

        labels: ['Speeding', 'Distraction', 'Weather', 'Road Conditions', 'Vehicle Issues'],

        datasets: [{


```

```
        data: [85, 78, 92, 80, 88],  
        backgroundColor: 'rgba(52, 152, 219, 0.2)',  
        borderColor: '#3498db',  
        pointBackgroundColor: '#3498db'  
    }]  
,  
options: {  
    responsive: true,  
    scales: {  
        r: {  
            angleLines: {  
                display: true  
            },  
            suggestedMin: 0,  
            suggestedMax: 100  
        }  
    }  
});  
}  
</script>  
</body>  
</html>
```

## AccidentInsight Analytics

Leveraging the KDD methodology to extract meaningful insights from accident data, aiming to make our roads safer and our analysis more predictive.

- 1 Data Selection & Integration
- 2 Data Preprocessing & Cleaning
- 3 Data Transformation
- 4 Data Mining
- 5 Pattern Evaluation

### AccidentInsight

Username

Password

Login

Don't have an account? [Request access](#)

#### Dashboard Overview

**12,458**  
Total Accidents Analyzed

**23.7%**  
Reduction in High-Risk Areas

**187**  
High-Risk Locations Identified

**94%**  
Model Accuracy

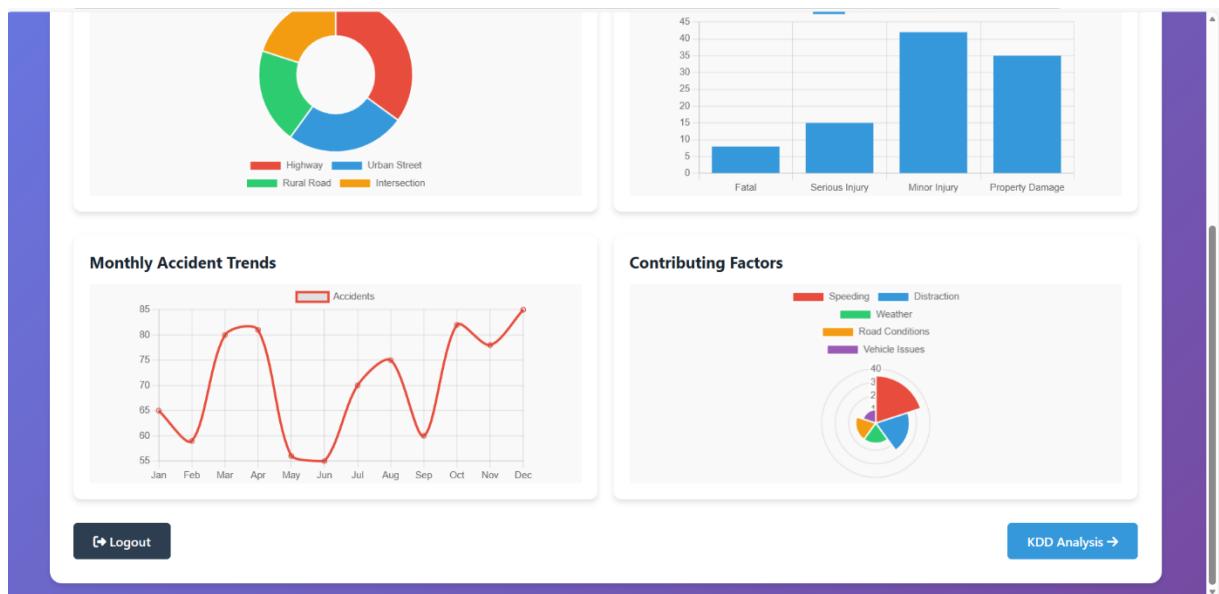
Accidents by Road Type
Accident Severity Distribution

Highway  
Urban Street  
Rural Road  
Intersection

Severity	Number of Accidents
Fatal	8
Serious Injury	15
Minor Injury	42
Property Damage	35

Monthly Accident Trends
Contributing Factors

32



## KDD Accident Analysis

Safety Analyst

Data Integration   KDD Process   Results & Insights

### Key Insights

- Weather Impact**  
Rainy conditions increase accident likelihood by 42% on highways compared to dry conditions.
- Time Patterns**  
Peak accident hours are between 3 PM and 7 PM, with Friday having the highest frequency.
- Road Type Correlation**  
Two-lane undivided roads have 2.3x more severe accidents compared to divided highways.
- Vehicle Age Factor**  
Accidents involving vehicles older than 10 years are 35% more likely to result in injuries.

### Risk Factors

Speeding	High
Distracted Driving	High
Poor Road Conditions	Medium
Weather	Medium
Time of Day	Medium
Vehicle Condition	Low

**Accident Hotspots**

Data Integration   KDD Process   Results & Insights

### Upload Accident Data

Upload your accident datasets for analysis using the KDD methodology


**Upload Dataset**  
 Click to upload or drag and drop CSV files  
 Maximum file size: 50MB

Time Range: Last 6 months | Geographic Region: All regions | Accident Severity: All severity levels

**▶ Start KDD Analysis**

[← Back to Dashboard](#) [Generate Reports →](#)

Data Integration   **KDD Process**   Results & Insights

### KDD Process Overview

The Knowledge Discovery in Databases process for road accident analysis



- Data Selection**: Identify relevant data sources
- Preprocessing**: Clean and prepare data
- Transformation**: Transform to suitable format
- Data Mining**: Extract patterns
- Evaluation**: Interpret and evaluate

### Data Quality Metrics

Data Quality Score



Metric	Score
Completeness	100
Accuracy	80
Consistency	80
Timeliness	80
Relevance	80

[← Back to Dashboard](#) [Generate Reports →](#)

## Result:

This project analyzes road accident data using a **KDD-based framework** to uncover hidden patterns and predictive insights. It applies **data mining techniques** like clustering, association rule mining, and classification to identify accident hotspots and risk factors. The goal is to enable **data-driven road safety decisions** and preventive strategies for reducing accidents.