# Netano - AI Network Analyser

## Introduction

Netano is an AI-powered network analysis application designed to analyze and visualize network traffic. It utilizes MongoDB as its database and FastAPI for backend processing, with a Vite+React frontend for user interaction.

## Data Storage in MongoDB

Netano stores approximately 50,000 logs in MongoDB's 'logs' collection. Each log contains details such as source IP, destination IP, protocol, and packet length. Additionally, a 'training_logs' collection stores another 50,000 records used to train AI models. MongoDB's vector database capabilities enable efficient processing of these large datasets for AI model training and real-time inference.

## AI Model Training

Four AI models were trained using data from the 'training_logs' collection. These models specialize in:

1. Anomaly Detection
2. Traffic Clustering
3. Hotspot Analysis
4. Protocol Prediction

The training utilized MongoDB's vector database features for data transformation and real-time querying. After training, the models were deployed within the FastAPI backend to provide real-time

insights on network traffic.

## Application Workflow

The application connects to a MongoDB database for live analysis of network traffic. Logs are stored in the 'logs' collection, while the 'training_logs' collection is used for AI model development. The process is as follows:

1. The Vite+React frontend sends requests to the FastAPI backend.
2. The backend fetches data from the MongoDB database.
3. AI models process the data to identify anomalies, cluster traffic, analyze hotspots, and predict protocols.
4. The processed data is returned to the frontend for visualization and user interaction.

## Live Data Analysis

Netano processes live data fetched from MongoDB in real-time. To manage storage, live data recording was paused, and the application now works on historical data from the database. This approach ensures efficient resource utilization while maintaining accurate and insightful analysis.

## Conclusion

Netano - AI Network Analyser leverages MongoDB's advanced database features and AI models to provide comprehensive network traffic analysis. Its integration with FastAPI and a modern Vite+React frontend ensures a seamless user experience and real-time insights for effective network monitoring and management.