White Paper

Intelligent Migration of SAS Code to Snowflake SQL with AI-Powered Conversion

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Abstract

Enterprises managing vast amounts of legacy SAS code face significant challenges in modernizing their data analytics infrastructure. Migrating this code to cloud-native platforms like Snowflake offers scalability, performance, and cost-efficiency. However, manual conversion is time-consuming, error-prone, and requires specialized expertise. This paper introduces the "SAS to Snowflake SQL Converter," a modern web application leveraging Google's Gemini API to automate and optimize the conversion of SAS code into production-ready Snowflake SQL. The application provides a user-friendly interface, advanced conversion logic, automated validation, and optional user authentication, tailored for enterprise adoption. This paper details the application's architecture, features, conversion process, technologies used, and potential benefits for organizations seeking to modernize their data analytics workflows.

1. Introduction

For decades, SAS has been a cornerstone of enterprise data analytics...

2. Challenges of Manual SAS to Snowflake Migration

* Syntax Differences

* Function Mapping

* Procedural vs. Set-Based Thinking

* Date and Time Handling

* LIBNAME and File Handling

* Testing and Validation

* Scalability and Time

3. The "SAS to Snowflake SQL Converter" Solution

The application offers a comprehensive solution through AI-powered code conversion, chunked processing, intelligent SAS-to-SQL mapping, automated validation, and a professional frontend UI.

3.1. Key Features

* AI-Powered Code Conversion (Gemini API)

* Chunked Processing

* Intelligent SAS to SQL Mapping

* Automated Validation

* Intuitive Frontend UI

* Optional User Authentication

3.2. Technical Architecture

* Frontend (React + Tailwind CSS + TypeScript)

* API Integration (Google Gemini)

* Conversion Logic (JavaScript/TypeScript)

* Authentication (Placeholder Logic)

* Code Syntax Highlighting

3.3. Conversion Workflow

1. User Authentication (Optional)

2. SAS Code Input

3. Code Chunking

4. Gemini API Interaction

5. Response Aggregation

6. Snowflake SQL Output

7. Review and Editing

8. Copy and Download

9. Automated Validation (Optional)

4. Technologies Used

* Frontend: React, Tailwind CSS, TypeScript, Lucide Icons, Monaco Editor

* API: Google Gemini API

* UI Components: Custom or prebuilt libraries

* Authentication: localStorage-based demo

* Deployment: npm, Netlify/Vercel/AWS

5. Getting Started

```bash

npm install

npm run dev

```

Configure Gemini API Key in the environment file.

6. Optional Features (Coming Soon)

* Export Full Conversion History

* Advanced Error Recovery & Retry

* Support for Bulk Job Conversion

* Role-Based Access and Dashboard Analytics

7. Benefits for Enterprises

* Accelerated Migration

* Reduced Errors

* Improved Efficiency

* Cost Savings

* Scalability

* Ease of Use

* Enhanced Data Modernization

8. Conclusion

The converter simplifies and accelerates SAS to Snowflake migration with Gemini API and a powerful UI, offering intelligent conversion, validation, and extensibility for enterprise-scale modernization.

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