🚀Unsaid Talks Project Documentation: LinkedIn Post Generator using n8n, Gemini, and Stability AI

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# 📌 Overview

This project is an automated workflow built in n8n that generates professional LinkedIn posts along with custom AI-generated images, and publishes them directly to a LinkedIn profile. It uses powerful AI services like Google Gemini, Wikipedia, and Stability AI, and includes logic to handle content duplication and image formatting.

# 🧠 What I Learned

* • Prompt Engineering for AI-generated text and images using Gemini and Stability AI.
* • How to use form input and dynamic prompt injection in n8n.
* • How to send HTTP requests with multipart/form-data correctly.
* • How to convert base64 image responses into actual image files.
* • How to avoid duplicate post errors on LinkedIn using post mutation.
* • How to chain multiple services and APIs together in a single visual workflow.

# 🧱 Workflow Architecture

## 🔹 Step 1: Form Input

Captures topic of the post and target audience using a form trigger.

## 🔹 Step 2: Generate LinkedIn Post

Uses Gemini + Wikipedia to generate professional, accurate LinkedIn post text.

## 🔹 Step 3: Generate Image Prompt

LangChain Agent creates a stylized prompt for Stability AI image generation.

## 🔹 Step 4: Create Image

Sends the image prompt to Stability AI via HTTP and receives base64-encoded image.

## 🔹 Step 5: Convert Base64 to File

Function node converts the image from base64 to binary format.

## 🔹 Step 6: Handle Duplicate Post Error

Appends unique timestamp or emoji in a code node to avoid LinkedIn rejections.

## 🔹 Step 7: Post to LinkedIn

Final post with image is sent using the LinkedIn API node.

# 🛠 Technologies & APIs Used

|  |  |
| --- | --- |
| Service | Purpose |
| n8n | No-code workflow automation |
| Google Gemini | Natural language generation for posts |
| Stability AI | Text-to-image generation (Stable Diffusion 3) |
| Wikipedia API | Knowledge enrichment |
| LinkedIn API | Content publishing |

# 🔄 Features

* • Unique content generation every time using Gemini
* • AI-enhanced image creation aligned with post topics
* • Duplicate-post avoidance logic using timestamps
* • Auto-posting to LinkedIn with image
* • Base64 → PNG conversion for usable output

# 🧩 Challenges Faced & Solved

|  |  |
| --- | --- |
| Challenge | Solution |
| LinkedIn duplicate post rejection | Timestamp + random emoji logic added before final post |
| Stability AI required `form-data` | Used multipart form and avoided manual Content-Type header |
| Base64 image handling | Wrote a custom function node to convert base64 to binary image |
| Prompt variability | Enforced variation through prompt design and mutation logic |