

Project Brief: Lightweight AI Agent for Electrolysis Efficiency Prediction

1. Introduction

In this project, you will build a lightweight multi-agent system in n8n that predicts water electrolysis efficiency and summarizes past experiments with highest efficiency. The workflow uses:

1. A Webhook trigger to receive free-text requests.
2. An LLM-based agent (mistral or other free models) to extract intent ('predict_run' or 'summarize_best') and experimental parameters.
3. A Switch node to route between the prediction and summarization branches.
4. A Predictor Function node implementing a pre-trained linear model.
5. A Summarizer branch that fetches a 50-row CSV from a public URL, parses it, and returns the experiment with the highest efficiency.
6. A Respond to Webhook node to return the JSON result.

Hints for Students

- Embed the regression coefficients in your Predictor Function node and apply the linear regression formula (Optional).
- Configure the HTTP Request node's Response Format to 'Text' and set 'Put Output in Field' to 'body'.
- Detect the tab delimiter ('\t') when parsing the CSV of past experiments.
- Use ES5 syntax (no arrow functions) inside Function nodes for compatibility with n8n Cloud.
- Ensure only the Predictor and Summarizer Function nodes feed into the Respond to Webhook node.

Deliverables

1. Exported n8n workflow JSON file.
2. Screenshots of your complete n8n canvas.
3. A PDF report including:
 - Regression RMSE and data preprocessing steps.
 - Example input prompts and output responses.
4. (Optional) A short demo video showing the workflow in action.