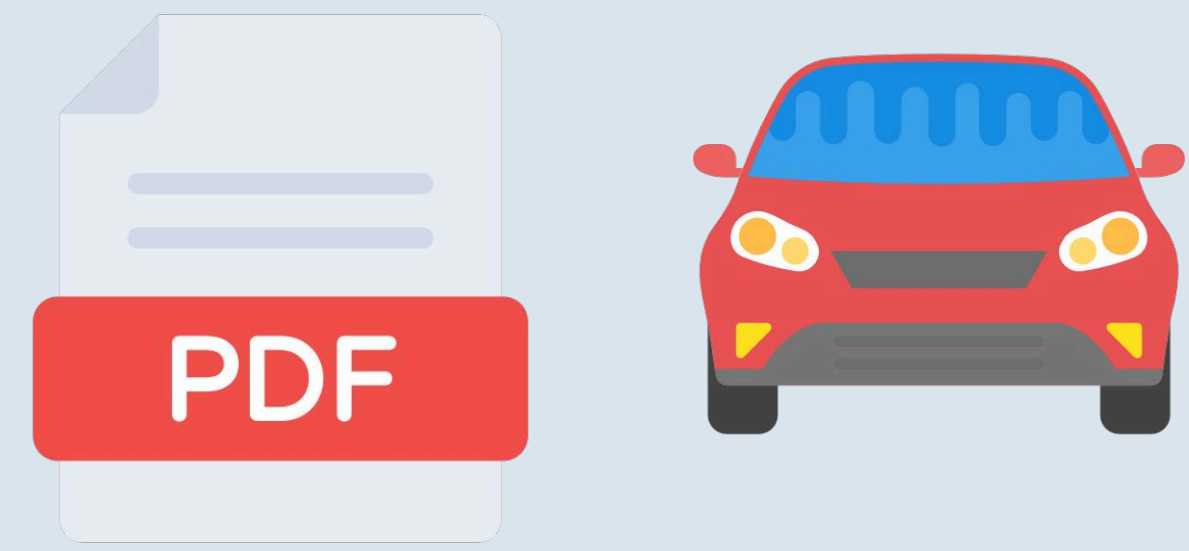


Data Acquisition



Vehicle user manuals in PDF format are collected as the primary knowledge source

A

Knowledge Extraction (RAG)



Processes manuals to create structured question-answer pairs

B

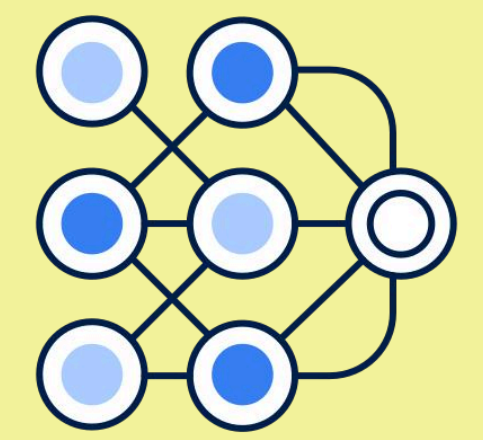
Preprocessing & Tokenization



The Q&A dataset is cleaned, normalized, and converted into numerical tokens for training.

C

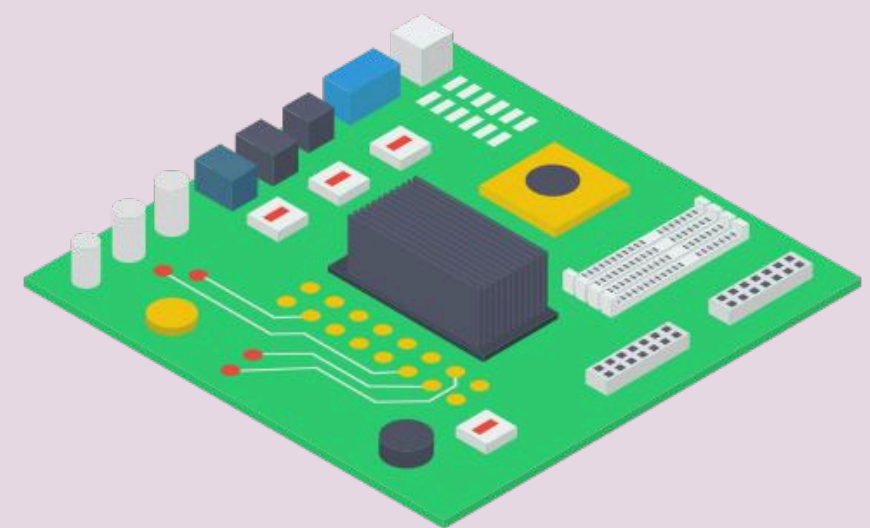
Model Architecture



A lightweight transformer-based model is defined, optimized for microcontroller constraints.

D

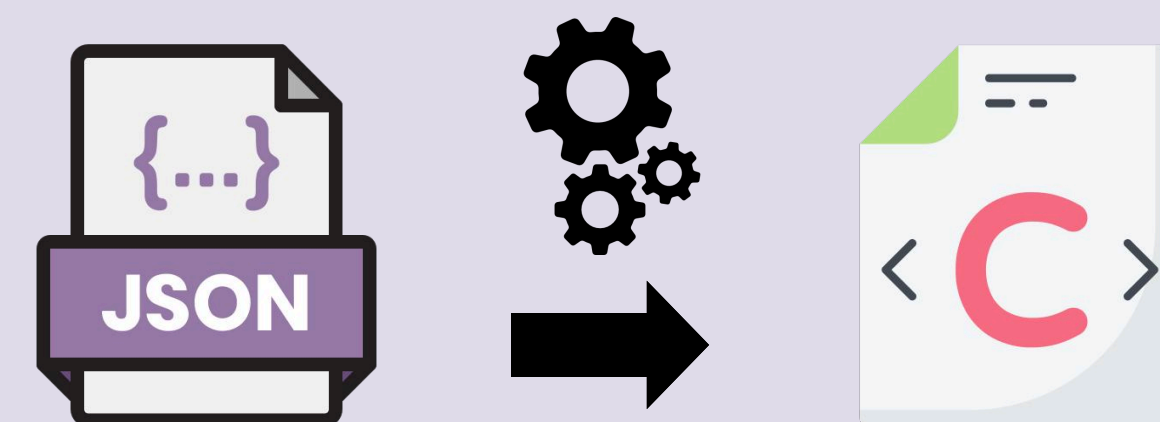
Edge Deployment



The final C++ model is deployed on an embedded device.

H

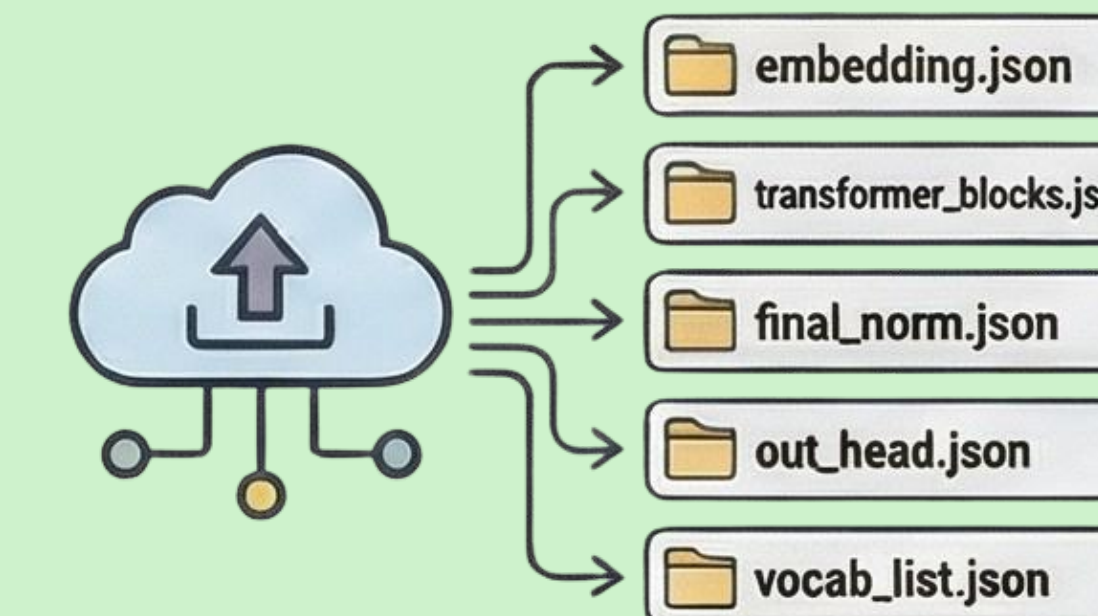
Model Converter



Processes manuals to create structured question-answer pairs

G

Model Parameters Export



All trained weights and configurations are serialized into structured JSON files

F

Model Training



The model is trained on the prepared Q&A dataset to learn the vehicle-specific knowledge.

E