

# AUTOMATIC FILLING OF ELECTRONIC FLIGHT STRIPS

Master's thesis  
2026

Author: Bc. Veronika Nevařilová  
Supervisor: Ing. Igor Szóke, PhD.

## Motivation

- Paper and digital flight strips filled manually — slow and error-prone.

DATE	POINT	POINT	OPR	POB	RMK
18/4			OK QUN06	1	AD
TIME	TIME	REG	A	RFL	FUEL
		4000			15L
TWY	RWY	FL	FL	TYPE	WTC
B	20			NG5	L
				DEP	DEST
				KY	KY

Figure 1: Example of paper flight strip from Kunovice airport.

## Goal

- Build a pipeline that automatically extracts data usable to fill digital flight strips from air traffic communication with little to no human intervention.

## Datasets

- Czech & english recordings from Kunovice airport.
- ~4 hours of annotated audio for fine-tuning ASR model.
- Dedicated evaluation dataset for each pipeline block.
- End-to-end evaluation dataset covering the full pipeline.

## Pipeline & Results

- Models used:
  - NeMo Parakeet for ASR
  - Google Gemini for information extraction
  - ResNet-152 speaker recognition model designed for low-bandwidth conditions combined with mentioned-callsigns decision strategy in speaker identification block

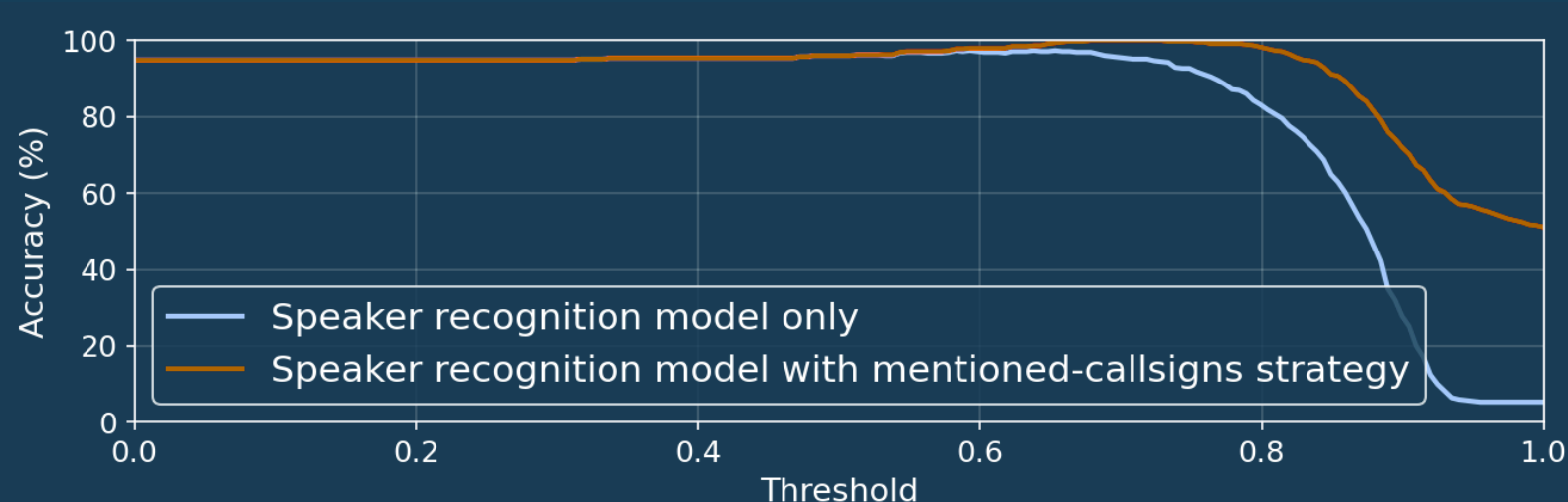


Figure 2: Comparison of speaker identification block without and with mentioned-callsigns strategy.

**72.8%**

end-to-end F1 score with no human correction

**80.2%**

end-to-end F1 with minimal human callsign correction (4 corrections / ~400 segments)

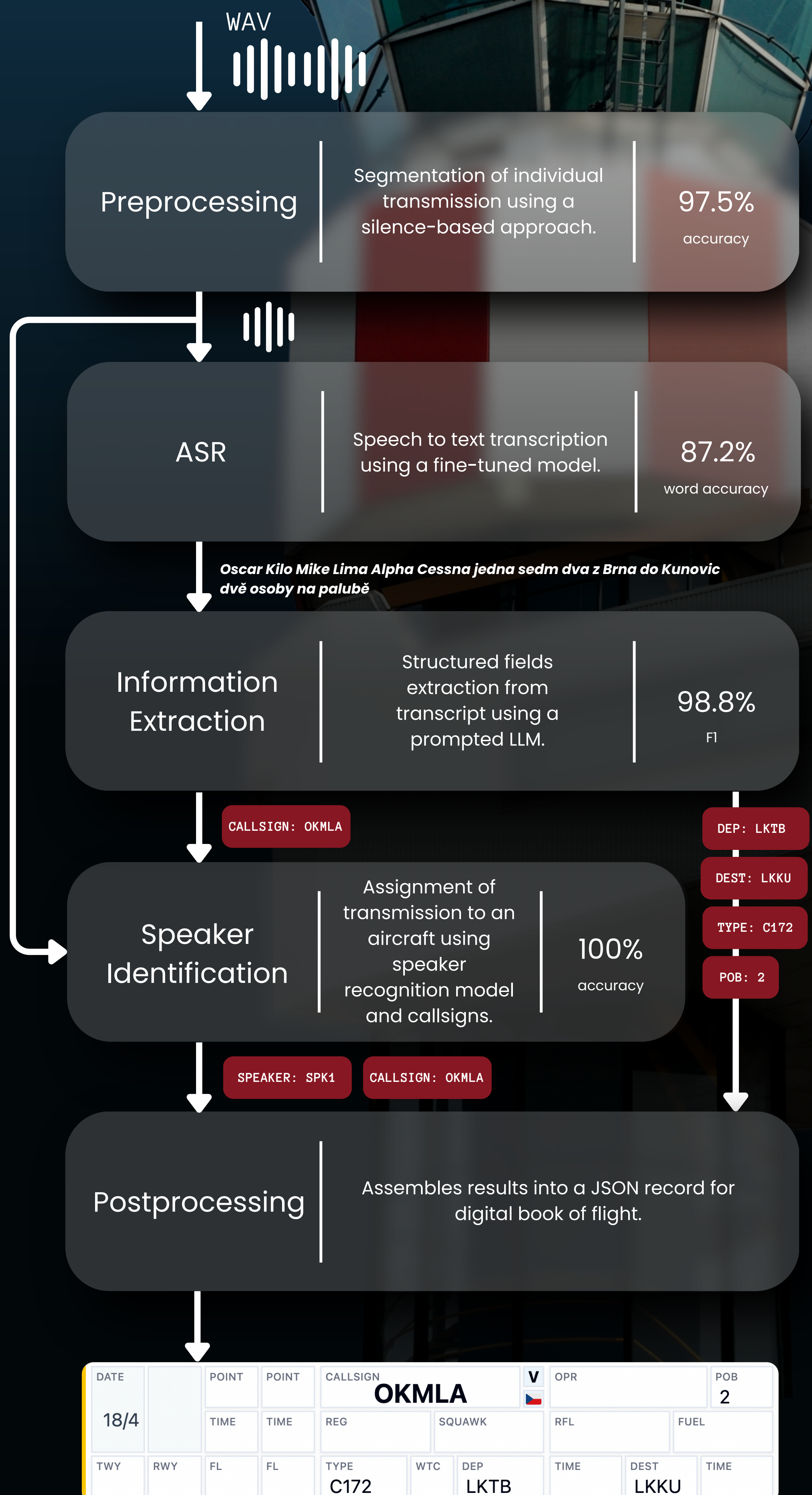


Figure 3: Pipeline for extracting flight strip data from air traffic recordings usable for filling digital flight strips.