Seznam Speech Team

S/research

Czech ASR and TTS in production, and the road to voice dialogue

you say...



We build **Czech speech models in-house** – ASR, a foundation TTS model and the building blocks of a voice assistant for **SeznamAI**.

what happens when you talk to SeznamAI

Automatic Speech Recognition

ASR

- **Offline ASR** – with timestamps and speaker diarization for subtitling and meeting transcripts.
- **Streaming ASR** trained from scratch on our own Czech data – 0.3 s latency, runs on CPU.
- **Just WER alone is not enough** – we explore perceptual and semantic evaluation metrics.
- **Architectures:** Whisper, Parakeet, Zipformer.
  - **Unsupervised pre-training:** wav2vec 2.0, HuBERT.

"Potřebuji nějaký tyčový vysavač do sedmi tisíc. Jaké jsou moje možnosti?"

Endpointing

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- Decides **when the user has finished speaking** – built on ASR features, so it reads **semantics, not just silence**.



Assistant (LLM)

"Co třeba Xiaomi G20 Lite za 2520 Kč?"

Text to Speech

TTS

- **Foundation TTS model** trained on Czech and English speech, fine-tuned per voice on a few hours of studio recordings.



- **LLM-based text normalization** – numbers, abbreviations, foreign words (2520 Kč → *dva tisíce pět set dvacet korun*).
- **Own denoising model** for training data.
- **Automatic metrics** (WER, speaker similarity, neural MOS) as a sieve – **people make the final call.**



...SeznamAI says

How do we compare?

- On **our own Czech test sets**, our ASR **outperforms open-source and commercial** services.
- In **blind listening tests**, our TTS voices stand up well against commercial ones.

Where to find our models

- **SeznamAI assistant** – voice input (ASR) and read-aloud answers (TTS).

asistent.seznam.cz

- **Audio versions of articles** on Seznam Zprávy, Novinky.cz, Sport.cz and other Seznam sites.
- **Public ASR & TTS API** coming early 2027.

What comes next

- **Contextual biasing** for rare and foreign terms; overlapping speakers.
- **More expressive**, emotional voices; **barge-in**; more languages.

Questions? Jobs? Thesis topics?
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