Airbus ATC Challenge
ACLP System
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Acoustic Model

**Highlights**
Chain TDNN architecture using Kaldi system.

Final model architecture:
- 11 relu layers with batch-norm Layer bypasses
- Trained with dropout using i-vector based speaker adaptation &
- 40 coefficient MFCC feature vector

**Training Databases**
- Fisher English - ~500h out of ~2000 available
- LDC94S14 ATC database
- Czech ATC data base – ZCU_CZ_ATC
- Challenge train DB

**Training Flow**
- GMM system trained on full Fisher English DB
- Training i-vector extractor
- Chain TDNN trained on full Fisher English DB using lattices created using GMM model (7 layers relu batch-norm)
- Deep Chain TDNN trained on the ATC train DB, using lattices created with the Fisher English TDNN.
  - i-vector extractor retrained on ATC train DB

Language Model

3-gram language model trained on:
- LDC94S14 ATC database
- Czech ATC database: ZCU_CZ_ATC
- Challenge train & development DB

Lexicon
All words in DBs that were used for training the LM &
Top 100 list of the most popular airlines.

“Call signs” Extraction

**Segment processing flow:**
- Remove non-speech events from the output transcription
- Look for the first airline name in the transcription. It will be the first word in the Call Sign
- The words that follow the airline name and are a string of alphanumeric words are added to the Call Sign

Results

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<thead>
<tr>
<th></th>
<th>WER</th>
<th>F1</th>
</tr>
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<tbody>
<tr>
<td>Leaderboard</td>
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<td>0.7679</td>
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<tr>
<td>Test Set</td>
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