# CAN COMPUTERS UNDERSTAND L2 CZECH?

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# WHY WE CARE?

PRONUNCIATION MATTERS

E-LEARNING IS AN IMPORTANT TOPIC

# WHAT WE HAVE NOW?

AUDIO IN VOCABULARY

DUOLINGO-LIKE APPROACH

SPECIALIZED APPS

# CAN WE DO BETTER?

AUTOMATIC SPEECH RECOGNITION

+

“INCORRECT SOUNDS”

# HOW TO ACHIEVE IT?

COLLECT DATA

ANNOTATE

CREATE NEURAL NETWORK

TRAIN MODEL

EVALUATE

# COLLECT DATA

AUDIO RECORDINGS

NON-NATIVE CZECH SPEAKERS

IDENTIFY “INCORRECT SOUNDS”

# ANNOTATE

| INTENDED SOUND | PRONOUNCED SOUND | ANNOTATION |
|---|---|---|
| a | a | a |
| | ɛ | a::e / e |
| | ã: | a:k1vN / á:vN |

# CREATE NEURAL NETWORK

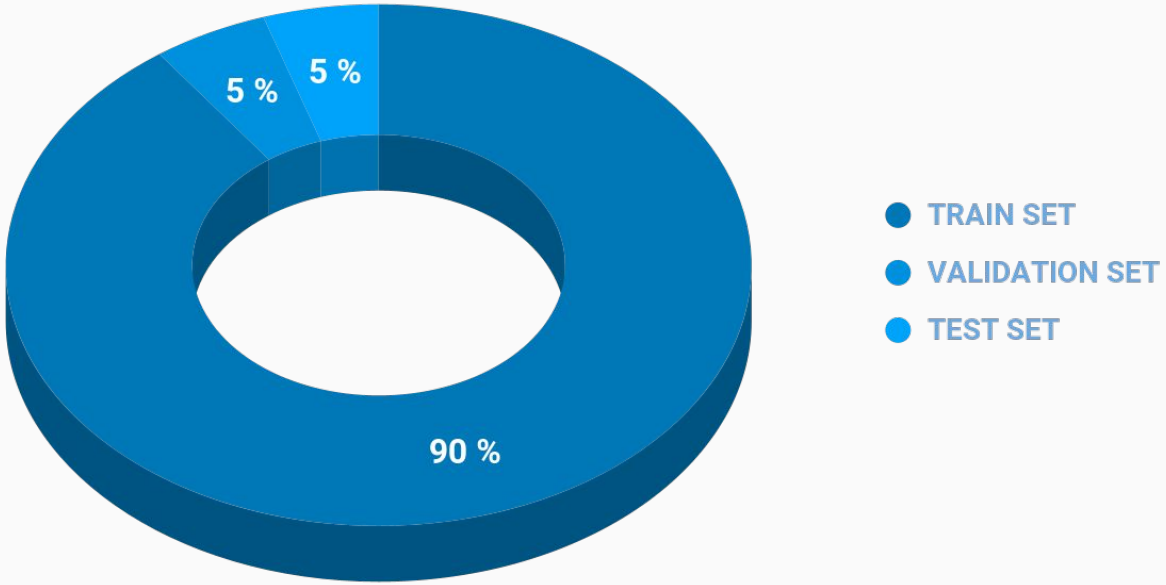
PERSEPHONE[1]

>3700 INDIVIDUAL SOUNDS

MANUALLY LABELED

[1]Oliver Adams, Trevor Cohn, Graham Neubig, Hilaria Cruz, Steven Bird, et al.. Evaluating phonemic transcription of low-resource tonal languages for language documentation. LREC 2018 (Language Resources and Evaluation Conference), May 2018, Miyazaki, Japan. pp.3356-3365. ffhalshs-01709648v4f

# TRAIN MODEL



# EVALUATE

| ERROR RATE | TRAINING | VALIDATION | TEST |
|---|---|---|---|
| *MODEL AV1* | 43 % | 42 % | 51 % |
| *MODEL AV2* | 15 % | 37 % | 41 % |

# DETAILED EVALUATION

| EXPECTED LABEL | OUTPUT LABEL | EXPECTED LABEL | OUTPUT LABEL |
|---|---|---|---|
| s | z | u:kD | u |
| m | n | au | a:kD |
| t:vA | t:vT | eu | e |
| z::dz | dz | au::a | a |

# WHAT NEXT?

WHOLE WORDS

ADJUST LABEL DICTIONARY

FOCUS ON MOST RELEVANT SPEAKERS

ANOPHONE