Global Open Resources and Information for Language and Linguistic Analysis (GORILLA)

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Background

• 2012 AARDVARC NSF grant, multiple workshops, goal new technologies for archives ("language graveyard" motivation)
• 2013-2014 initial projects: cooperation with Tanja Schulz (ASR), Monica Macaulay, Arienne Dwyer to work on initial ASRs
• 2014 Relocation to Indiana University
• Cooperation with the Archive of Traditional Music (ATM) at IU
• Large Digitization project at IU for the archive content ($ 15 mil, now $ 50 mil)
• Suggested cooperation with Latin American countries
Background

since 2015

• Cooperation with the AHEYM project at IU, Dov-Ber Kerler
• Cooperation with Hilaria Cruz from UT Austin to create a first speech corpus on Chatino, Forced Aligner, NLP tools
• Launch of GORILLA, legal arrangements for CC-content
• Multiple Language Resources, technology projects
• grant proposals to DEL, DARPA
• Collaboration with The Language Conservancy, Lakhota.org
• LLOD cooperation, CLARIN groups
Background

since 2015

• Toyota Technological Institute at U Chicago (Sadaoki Furui): proposed speech corpora for all languages, budgeted $ 50 mil
• LFG Annual conference with focus on endangered languages
• Midwest Speech and Language Days: William Lewis (cooperation with Lakhota.org)
• Endangered Language Alliance cooperation with Chatino corpus
• Cooperation with UT Austin, Hans Boas and Texas German archive
• Exchange with Australia (Initial Summit, now IU-ANU cooperation) related to ATM
About goals

Language Archive
"Language Graveyards"

Language data producers/users:
Endangered and under-resourced languages

Top layer of service for digital language data
About goals

Language
Communities

Language
Documenters:
Transcription
bottleneck

NLP:
Language resource bottleneck
Technological mono-culture

Disparate needs and techniques
Philosophy: Global

• No focus on a particular language family or geographical area
• Focus on endangered and under-resourced languages
• Promoting standards in terms of data formats and data use
Philosophy: Open

• Free of charge
• Accessible without limits imposed by the communities, researchers, or the archive that stores the data
• Free to be used under Creative-Commons Attribution-ShareAlike (CC BY-SA) license or freer for any use, including derivative and commercial use
• Using only common, open formats (XML-based annotation standards, Praat TextGrid, TEI, etc.)
Content: Resources

- Audio and video corpora, including parallel corpora
- Tree banks
- Lexicons and dictionaries
- Language models
- Other tools for NLP, for corpora analysis and processing
Example: SJQ Chatino

• Earlier work
• Primarily a spoken language
• Recently developed practical orthography (Cruz & Woodbury, 2014)
• AILLA: 107 hours of audio and video recordings (including restricted files), out of that perhaps 10 hours transcribed (out of that mainly grammatical elicitation),
Chatino

• Starting with a text in practical orthography used as a “transcription,” the initial speech corpus has been created
• Initial speech corpus has been manually annotated/time-aligned (cut-and-paste method)
• Initial annotation contains also POS tags and translation.
• A pronunciation dictionary has been created.
• A simplified pronunciation dictionary has been created omitting tone information (improving type-token ratio)
• Tools like ELAN2Split
• Automatic Time Aligner trained on the initial annotations
• Automatic Time Aligner to facilitate creation of more annotated material to ultimately train an initial speech recognition module.
Other languages

Speech Corpora:

• Croatian (Dalmatia), Yiddish, Korean, Baharlu (Turkish, Iran), Egyptian Arabic, German, Burmese, Polish, …
• Transcriptions and annotations of existing Texas German recordings (in cooperation with Hans Boas from UT Austin)
Language Resources

Data and Software Resources:

• ELAN2Split, scripts and environments, for creation of speech corpora for ASRs, Forced Alignment training
• Free Linguistic Environment (FLE)
  • Grammar Engineering Platform for morphologies, syntax, semantics using LFG and related frameworks
• Morphologies (Finite State Transducers) for various languages
  • including extensions of previous projects by other colleagues
• Video and Audio tagging (multi-modal approach)
Technologies

Transcription Bottleneck

• Forced Alignment
• Speech Recognition

Issues

• Limited scope of technologies
• Cost-factor
Technologies

Language Resources Bottleneck

- Lack of corpora, data sets
- Lack of technologies (speech, language)
- Creation of new resources is impeded and expensive due to a lack of bootstrapping technologies
Our Focus

• NLP technologies and processes for:
• Transcription Acceleration Project (TAP) (coined by Nick Evans, ANU, in a joint meeting)
• Grammar Engineering (hybrid Deep Linguistics and Deep Learning) platforms
• New approaches to speech processing: Deep Learning, KALDI, …
• DOIs, ISLRN for data and language models
• Semantic Web infrastructure (RDF, OWL, grammar models)
• Make resources available on sites like Kaggle, organizing Datathon and Hackathon on language data and data science approaches
Next steps

Workshops with a Ken Hale link

• Documentation in the 21st century
• Technology for language data

In cooperation with ANU, Jane Simpson and Nick Evans, and others.