

Introducing Pipeline

Interactive visualization and analysis of DARLA and new-fave output

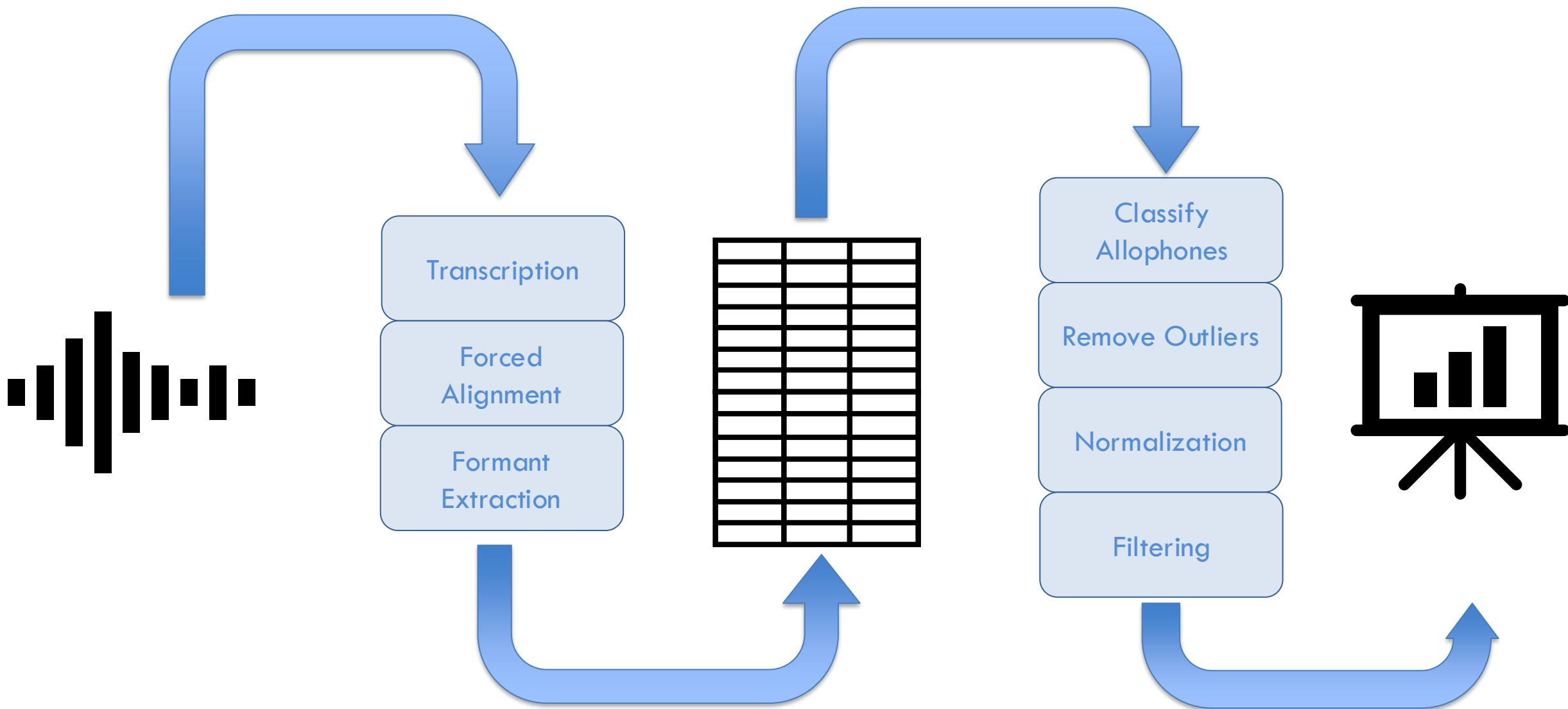
Joey Stanley

Brigham Young University

New Ways of Analyzing Variation 54

October 24, 2026

Montreal, Quebec



Audio → Spreadsheet

Transcription

- CLOx (Wassink, Squizzero, Fellin, Nichols 2018)
- Bed Word (Ma, Glass, & Stanford 2024)
- Whisper (Radford, Kim, Xu, Brockman, McLeavey, Sutskever 2022)
- etc.

Forced Alignment

- WebMAUS (Schiel 1999, Kisler, Reichel, & Schiel 2017)
- SPPAS (Bigi 2015)
- Gentle (Ochshorn & Hawkins 2015)
- Prosody-Lab (Gorman, Howell, & Wagner 2011)
- Montreal Forced Aligner (McAuliffe, Socolof, Mihuc, Wagner, & Sonderegger 2017)
- etc.

Formant Extraction

- FAVE-Extract (Rosenfelder, Fruehwald, Evanini, Yuan 2011)
- Fast Track (Barreda 2021a)
- new-fave (Fruehwald 2025a)
- etc.

Not Secure — darla.dartmouth.edu/uploadbound

DARLA: Automated Vowel Extraction

DARLA

[Semi-Automated](#)[Completely Automated](#)[FAQs](#)[Cite](#)[Dartmouth Linguistics](#)[Neukom Institute](#)[Georgia Tech Linguistics](#)

Automated Vowel Extraction with Manual Transcriptions and Utterance Boundaries

Upload your audio files and manual transcriptions (with sentence boundaries annotated [as described here](#)) to run forced alignment followed by formant extraction.

[Click here at any time to cancel or start over.](#)

Upload a .wav or .mp3 file: no file selected
Longer recordings (of at least 2 minutes) are recommended. Your uploaded files are stored temporarily on the Dartmouth servers in order to process your job, and deleted after.

Manual transcription as a .TextGrid file: no file selected
Textgrid should contain a tier named "sentence" with sentence/breath group intervals.

Filter out stop-words? ☒ Yes ☐ No
[This is the list](#) of stop-words we remove. (Link opens in a new tab.)

Filter out unstressed vowels? ☒ Yes ☐ No

Filter out vowels whose F1 or F2 bandwidths are over 300? ☒ Yes ☐ No

Your e-mail address:

We will not store or distribute your address.

Spreadsheet → Results

Classifying Allophones

- Include historical classes?
- CMU Dictionary or manual?
- Do it before outlier detection (Stanley 2022a, b)

Outlier Detection

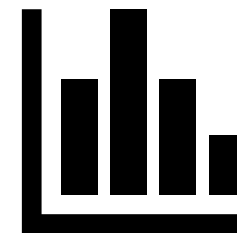
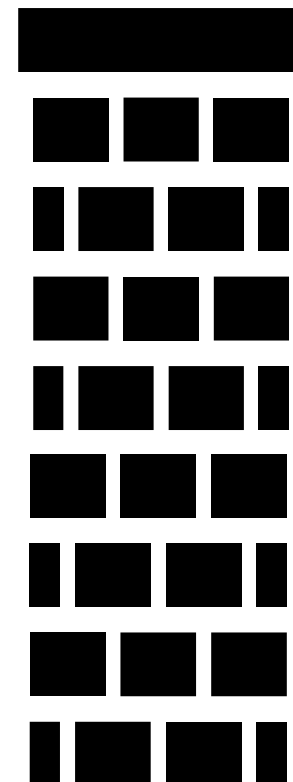
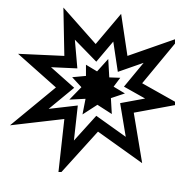
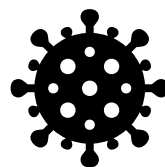
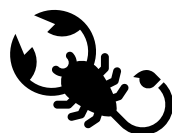
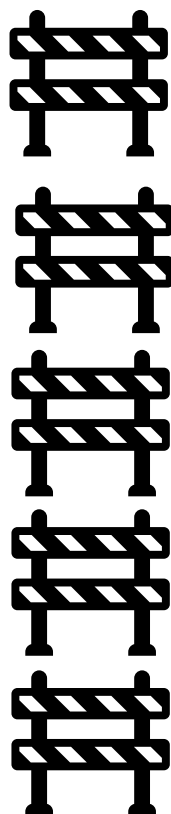
- F1 and F2 standard deviations, Mahalanobis distances, etc.

Normalization

- Methods (Lobanov 1971, Nearey 1978, Johnson 2020 etc).
- Tools: NORM (Kendall & Thomas 2007, 2014), Tidynorm (Fruehwald 2025b)
- Discussion (Adank et al 2004, Kelley & Tucker 2020, Barreda 2020, 2021b, 2025, etc)

Filtering

- Remove presonorants? Trajectories? Unstressed syllables? Stopwords?



Upload

Data source

- ☒ DARLA
- ☐ new-fave
- ☐ sample

Upload a .csv file generated by DARLA

Browse... No file selected

This should be the file originally called "formants.csv" that DARLA emailed to you. (The file you upload can be named whatever you want.)

Process

Process my data

You'll know the data loaded correctly when a table appears on the right.

Manage datasets

No datasets loaded yet.

Remove selected

Download

Click the button below to download this processed version of the data. It is your same data but it has been cleaned and gone through a pipeline of processing steps already.

📄 Export this processed data

Welcome to Pipeline!

Upload a spreadsheet of formant measurements on the left to get started.

New here? Check out the **About** tab for an introduction, citation information, and references.



<https://stanley.byu.edu/pipeline>

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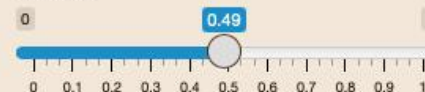
<https://stanley.byu.edu/pipeline>

Tokens

Show individual measurements in the vowel space.

Words

Opacity



Size



Centers

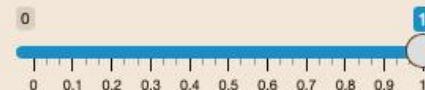
Show the central tendency of each vowel class.

Medians

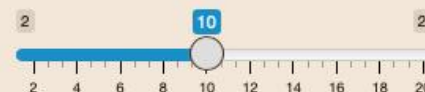
One label per...

allophone

Opacity



Size



Vowel Space

Visualize the overall extent of a speaker's vowel space.

☐ Hull

☐ Reference points

Distribution

Show the spread or density of each vowel class.

KDE contours

One contour per...

allophone

Min. tokens

5

Opacity

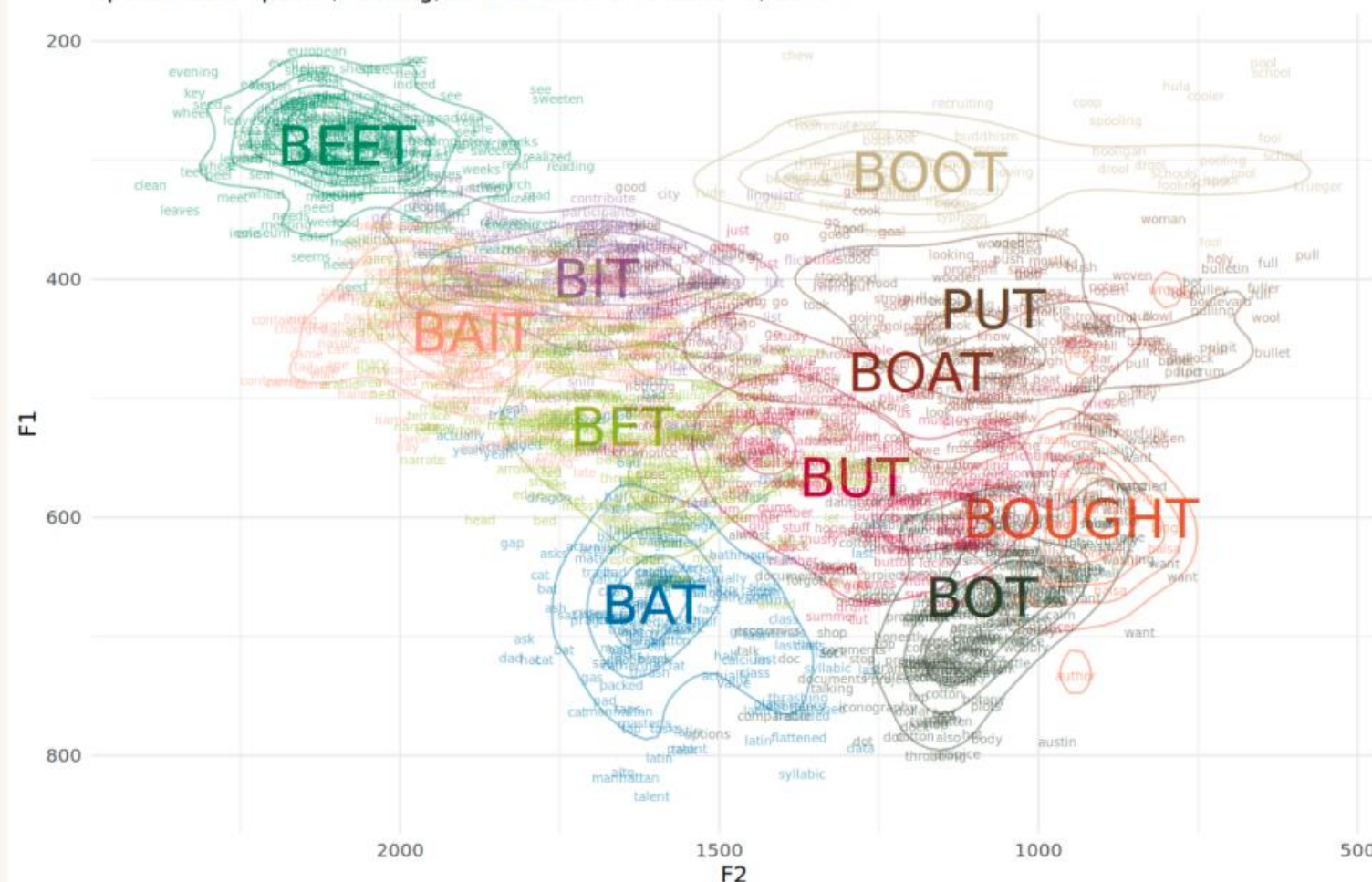


Contour lines



Joey's Vowel Space

Spontaneous speech, reading, and wordlists on October 8, 2026



Pipeline demo

Pipeline Future Work

- Multilingual support
- Toggle between transcription systems
- Customize and refine other processing
 - phoneme and allophone classification
 - custom list of stopwords
 - toggle between outlier detection procedures
- Additional trajectory plots and analyses using DCT
- Greater support for multiple speakers
- More and better statistical analyses
- Automatically download a log/report for reproducibility and transparency

Larger Contributions

- A tool for curious students.
 - Get to the “fun” part of phonetics sooner; the underlying processes can come later in their education.
 - If we can help curious budding linguists, that’s good news for our job security.
- Experienced sociophoneticians may find the quick-and-dirty plots useful for exploration or teaching.
- Consistency in data processing.
 - Across speakers within a dataset.
 - Across datasets and studies.
 - Removes the methodological variable so that the sociolinguistic

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View this and my other tool, VoxHumana, at

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