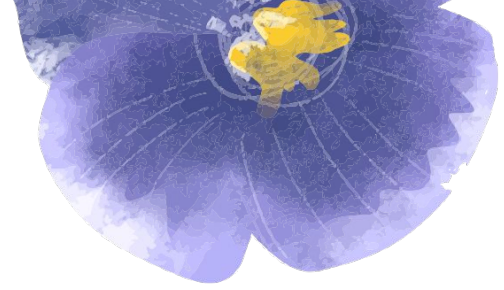


The background is white with large, soft purple wavy shapes. There are four purple flowers: a large one in the top left, a smaller one in the top right, a smaller one in the bottom left, and a smaller one in the bottom right. Each flower has yellow stamens and green leaves. There are also two clusters of small dark blue dots, one on the left and one on the right.

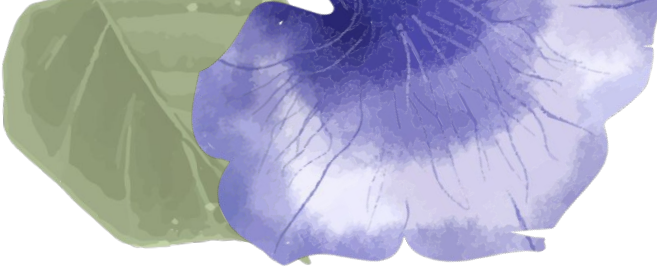
Why Should I Care About Coding

if I want to be a doctor?!



“Coding is useless.”

—**Sarika in high school who
wanted to be a doctor and hated
coding**



Wrong

As I start my PhD in Computer Science, I have been working on projects where we can apply the things we learned in JamCoders to the hospital!



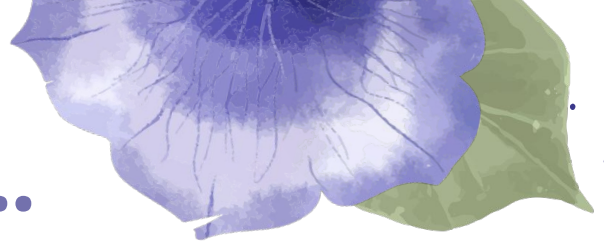
Some Diseases are Hard to Catch

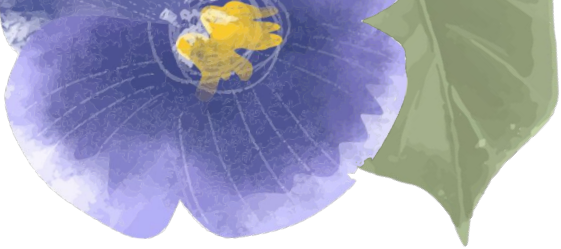
- There's a disease called PPA that slowly takes away a person's ability to speak and understand language
- There are 3 different types, and doctors need to know which type to treat it correctly
- One type is sneaky: the patient still sounds totally normal. Fluent and grammatically perfect sentences. But they've quietly lost the actual meaning of their words.
- Real example: a patient says "she's holding that kite thing... with the string bits" instead of "the girl is flying a kite"



Why can't doctors just... listen and tell?

- They can, but it takes years of specialized training (neurologists, speech-language pathologists)
- Every recording has to be reviewed by hand, word by word, and one recording can take hours to score
 - SUPER expensive and slow
 - Most clinics and hospitals don't have this kind of specialist on staff
- Old computer tools catch the "obvious" speech problems (stuttering, slow talking) and completely miss this sneaky type





This is where the coding comes in!

- Our lab built a program that listens to a recording, turns the speech into text, and picks apart the patterns doctors care about automatically, in seconds instead of hours.
- Coding didn't replace what doctors do. It became a tool that helps them do it faster and catch things earlier.

Don't be scared plz



How do you teach a computer to "listen" like a doctor?

Two separate skills, tested separately:

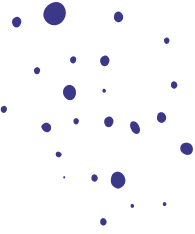
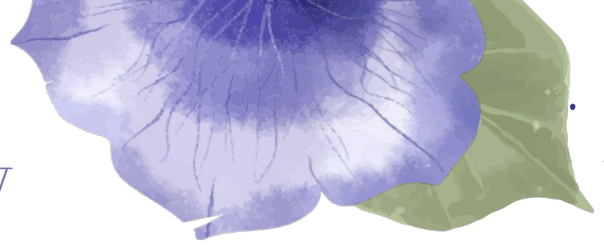
- Skill 1: Can they say the words correctly? (like grading a spelling test)
- Skill 2: Do the words make sense together? (like grading a reading comprehension test)

Patients with the sneaky type: ace the spelling test, fail the meaning test. Other types: the opposite pattern.

Our code turns each skill into a score from 0 to 1, so patients can be compared directly with no guessing.

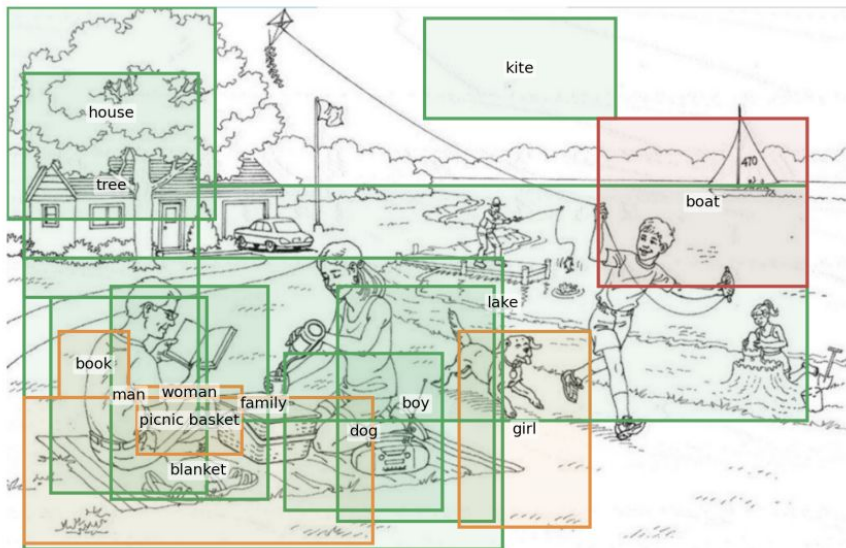
What our code actually does

1. **Record** : patient describes a picture out loud
2. **Transcribe** : code converts speech to text (like Siri) and separately tracks the raw sounds they made
3. **Score** : code compares what they said to what a healthy person typically says
4. **Decide** : code combines all the scores into one prediction: which disease pattern best matches

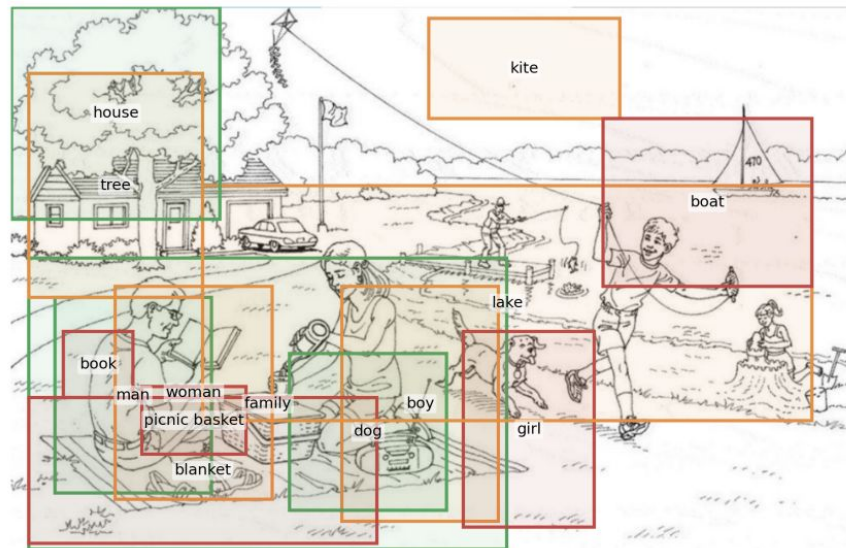


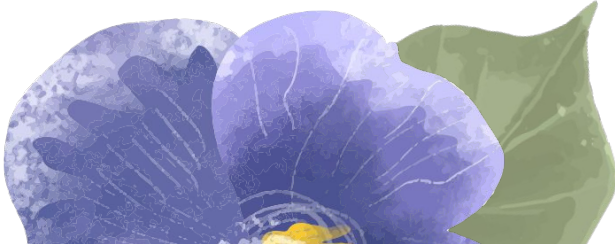
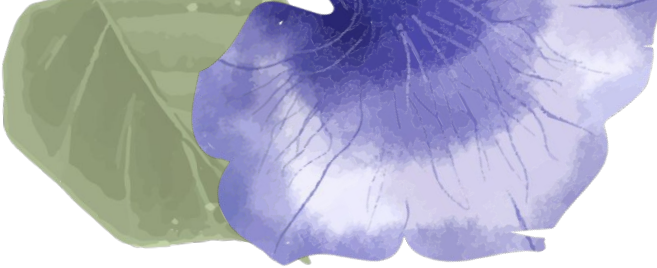
Proportion of participants naming each entity

A) HC



B) svPPA

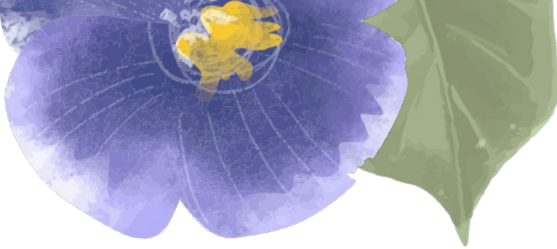




Did It Work?

- **92%** — how well the code tells apart healthy speech vs. this disease
- **254** recordings analyzed — something no human team could do by hand in a reasonable amount of time
- **First-ever** automated tool to catch this specific distinction between disease types

Every decision the code makes can be explained in plain English, not a mysterious black box.



Why this actually matters

- Faster diagnosis = starting the right treatment sooner
 - Clinics without specialists can now screen patients
 - Doctors get a second opinion backed by data, not just a gut feeling
 - A tool for the doctor, not a replacement for one
- 
- 



So... why should YOU care about coding?

- You don't have to want to be a software engineer
 - You don't have to think computers are more interesting than people
 - Coding is a tool the same way math or writing is a tool
 - Less "am I a coding person?" more "what problem do I actually care about, and can code help me solve it faster or better?"
- 

The image features a central text 'the end' in a dark blue serif font. It is surrounded by four stylized purple flowers with yellow centers, each with green leaves. The flowers are positioned in the corners: top-left, top-right, bottom-left, and bottom-right. There are also two clusters of small dark blue dots, one in the middle-left and one in the middle-right. The background is white with large, light purple wavy shapes.

the end