

Background

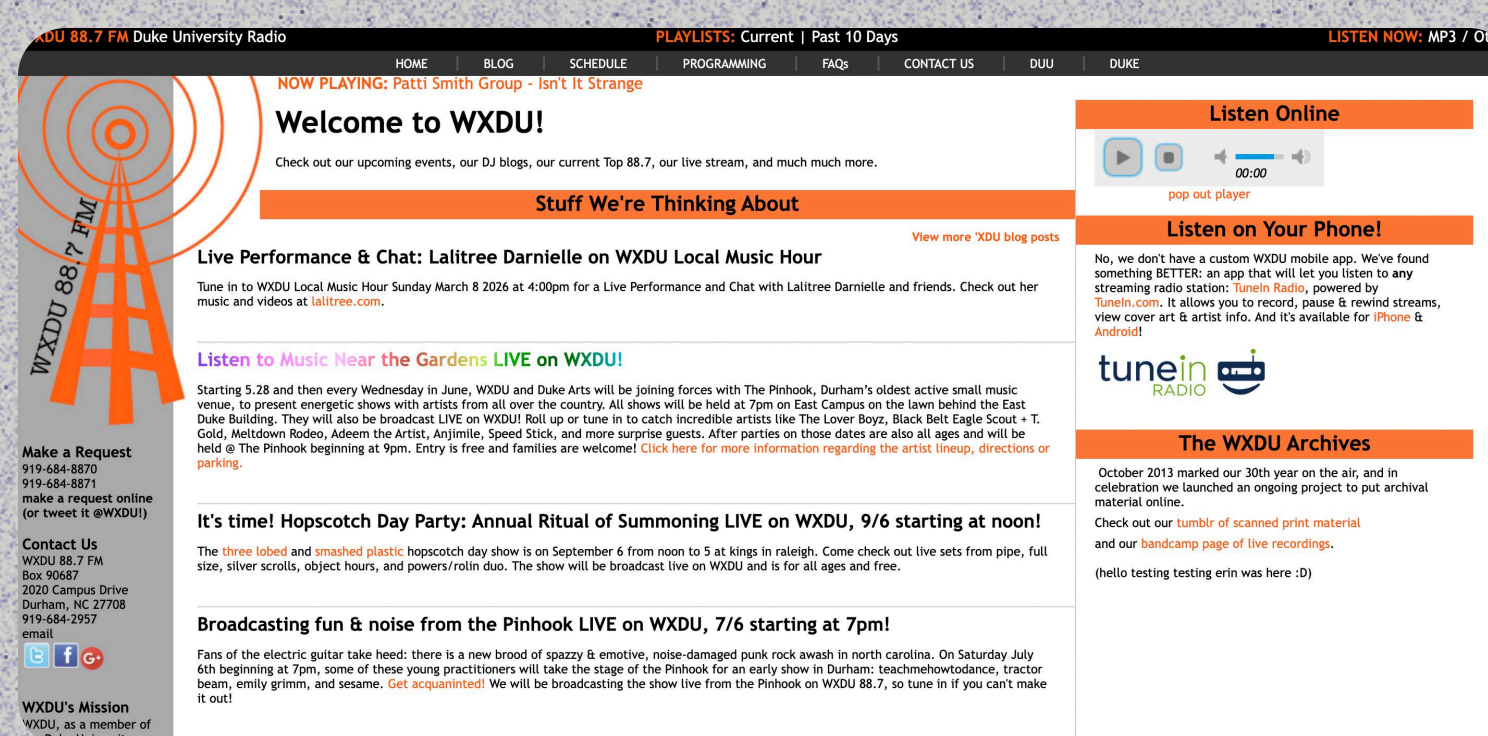
By working with local radio stations, mainly WXDU at Duke and WXYC at UNC, our aim is to create open-source, maintainable, and accessible solutions to the often scrappy, outdated technology that non-commercial radio stations rely on everyday. While our immediate goal was to build open source tools to improve WXDU's tech stack, we believe these software tools and qualitative research insights can prove useful to all radio stations.

User Experience

What do DJs need?



Stakeholder interview w/ Marc Loeffke



Original WXDU Website

(2) Initial Software Improvements

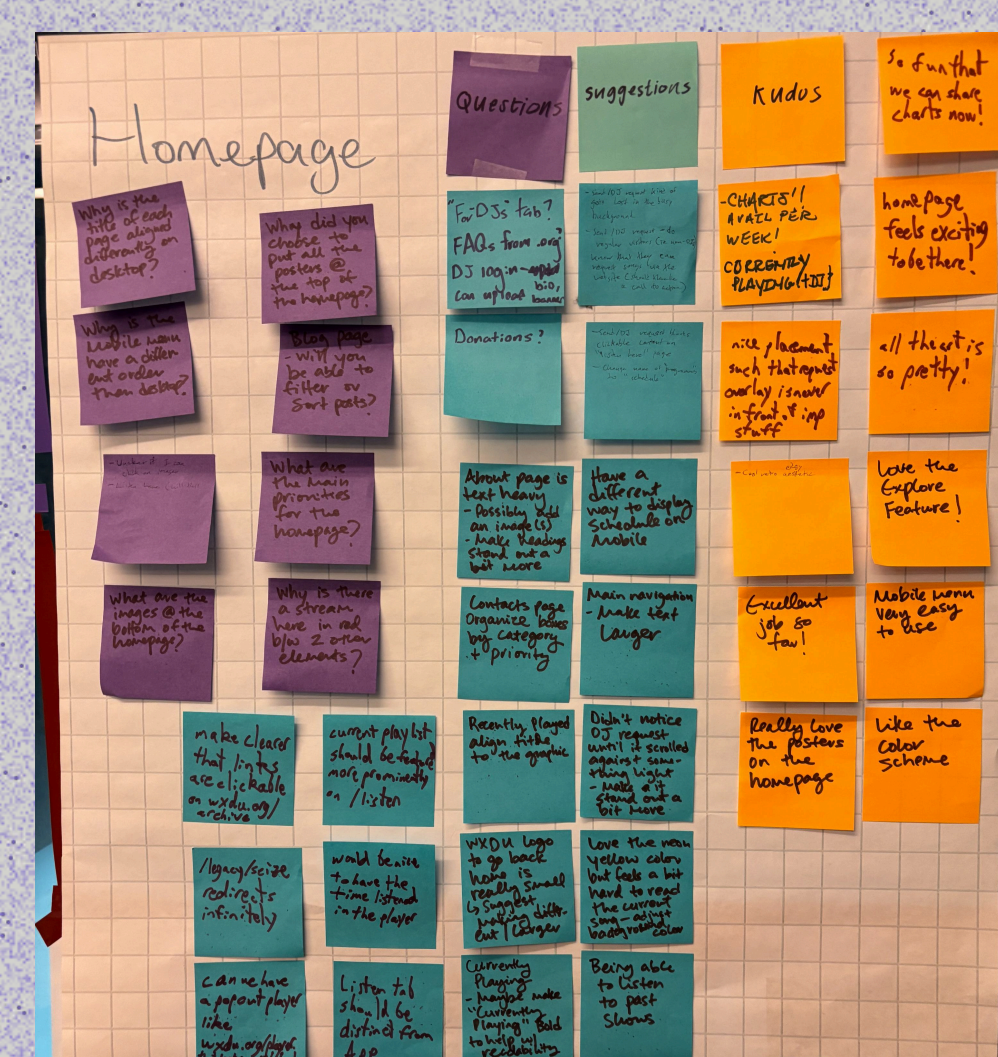
- Increase **visibility of current-playing** information & ease of web-streaming WXDU
- Overhaul **visual style** while keeping functionality familiar to users
- Improve **real-time communication** between DJs and listeners
- Allow listeners to better **explore past shows**, charting new releases, & DJs' music recs

(3) Week 6 UX Workshop

- Conducted workshop with DJs following **SQUACK methodology** (**S**uggestions, **Q**uestions, **U**ser signals, **A**ccidents, **C**ritical, **K**udos)
- Gathered feedback on website & app:
 - **Unintuitive features:** Recently Played widget, DJ Request widget
 - **Cluttered features:** Listen page, nav bar
- Make overall design more cohesive and responsive



UX workshop at WXDU



SQUACK feedback

(1) Qualitative UX Interviews

Conducted **13 semi-structured, 30-minute interviews** with DJs at WXDU to understand radio culture, technology, and community.

WhisperX generates diarized transcripts → manual cleaning

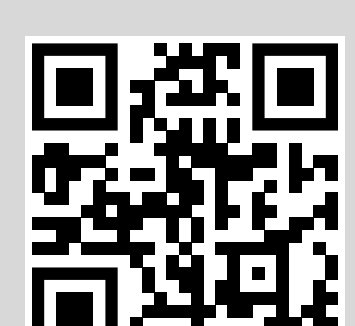
Thematic analysis & write-up

Common themes uncovered:
Institutional instability;
Community dynamics;
Music discovery;
DIY/volunteer culture;
Specific questions probed:
Software improvement ideas;
Physical music;
Bug reporting;
WXDU history

Software Development

(1) Overhaul: WXDU Website

Access the website here, or at wxdu.art



GitHub organization!



Customizable banner of archive materials & event posters

Streaming ticker + Nav bar

Dynamic background

Schedule Widget: Shows for Today



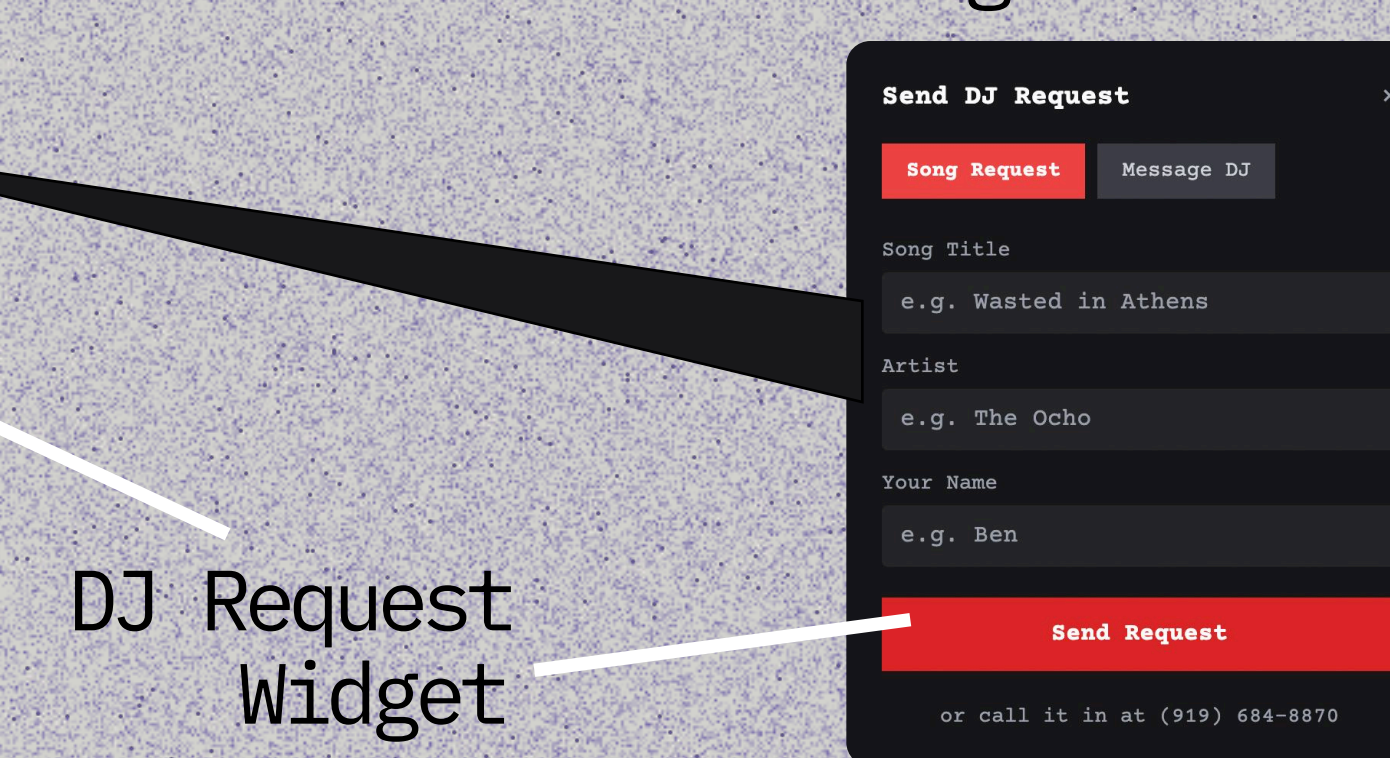
Vinyl Player Widget & Now Playing Widget: Current Song Info

Station	Time	Artist	Album	Genre	Notes
WXDU 88.7 FM	10:00-11:00 AM	Matthew 2	Matthew 2	Classical	
	11:00-12:00 PM	Classical 3	Classical 3	Classical	
	12:00-1:00 PM	Classical 4	Classical 4	Classical	
	1:00-2:00 PM	Classical 5	Classical 5	Classical	
	2:00-3:00 PM	Classical 6	Classical 6	Classical	
	3:00-4:00 PM	Classical 7	Classical 7	Classical	
	4:00-5:00 PM	Classical 8	Classical 8	Classical	
	5:00-6:00 PM	Classical 9	Classical 9	Classical	
	6:00-7:00 PM	Classical 10	Classical 10	Classical	
	7:00-8:00 PM	Classical 11	Classical 11	Classical	
	8:00-9:00 PM	Classical 12	Classical 12	Classical	
	9:00-10:00 PM	Classical 13	Classical 13	Classical	

Schedule CSV Parser

Time	Artist	Album	Genre	Notes
10:00-11:00 AM	Matthew 2	Matthew 2	Classical	
11:00-12:00 PM	Classical 3	Classical 3	Classical	
12:00-1:00 PM	Classical 4	Classical 4	Classical	
1:00-2:00 PM	Classical 5	Classical 5	Classical	
2:00-3:00 PM	Classical 6	Classical 6	Classical	
3:00-4:00 PM	Classical 7	Classical 7	Classical	
4:00-5:00 PM	Classical 8	Classical 8	Classical	
5:00-6:00 PM	Classical 9	Classical 9	Classical	
6:00-7:00 PM	Classical 10	Classical 10	Classical	
7:00-8:00 PM	Classical 11	Classical 11	Classical	
8:00-9:00 PM	Classical 12	Classical 12	Classical	
9:00-10:00 PM	Classical 13	Classical 13	Classical	

Listen Page



DJ Request Widget

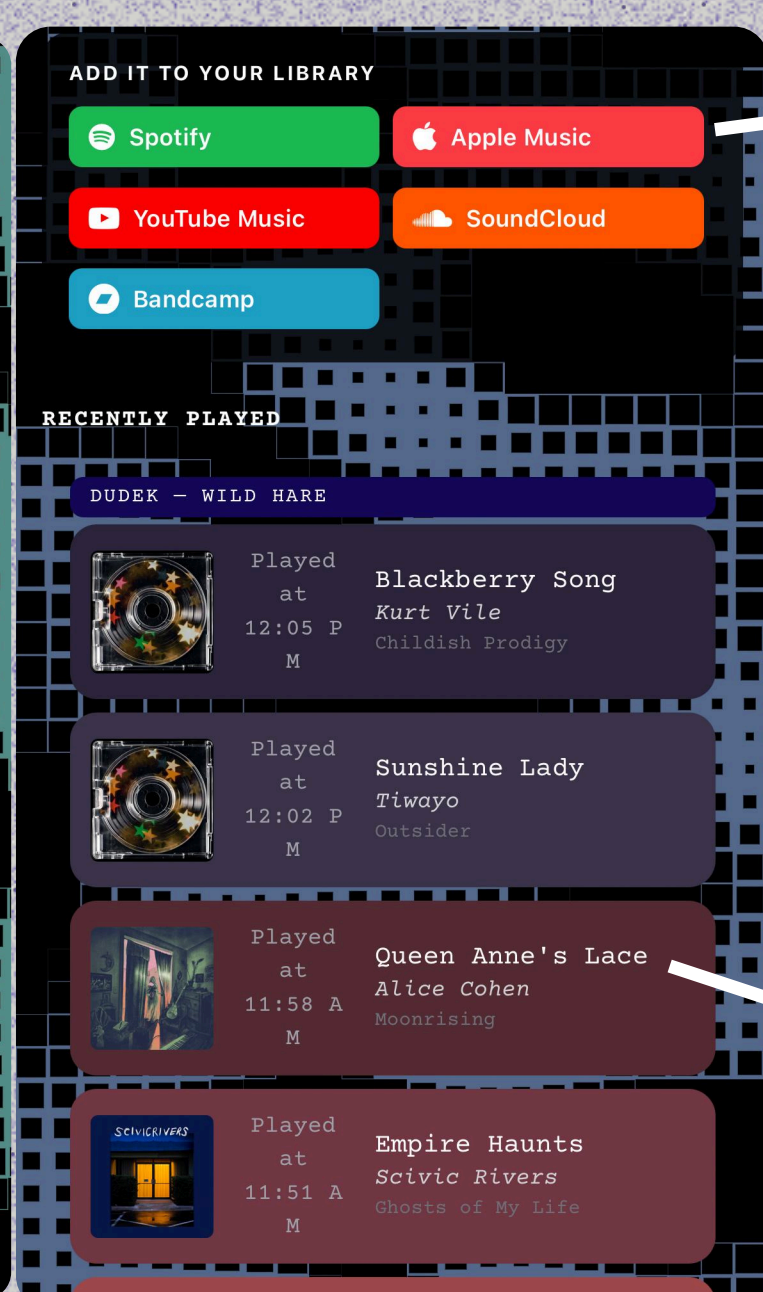
(2) New: WXDU Mobile App

Current Show Widget: DJ on Air, Show Name, Current Song info, Stream Button



Main Listen Page of WXDU Mobile App

Song Platform Connector Buttons



10 Most Recently Played Songs



Connect Page

Stream Connector Buttons

Info about WXDU + Navigation to website, Instagram, and GitHub

(3) Tech Stack

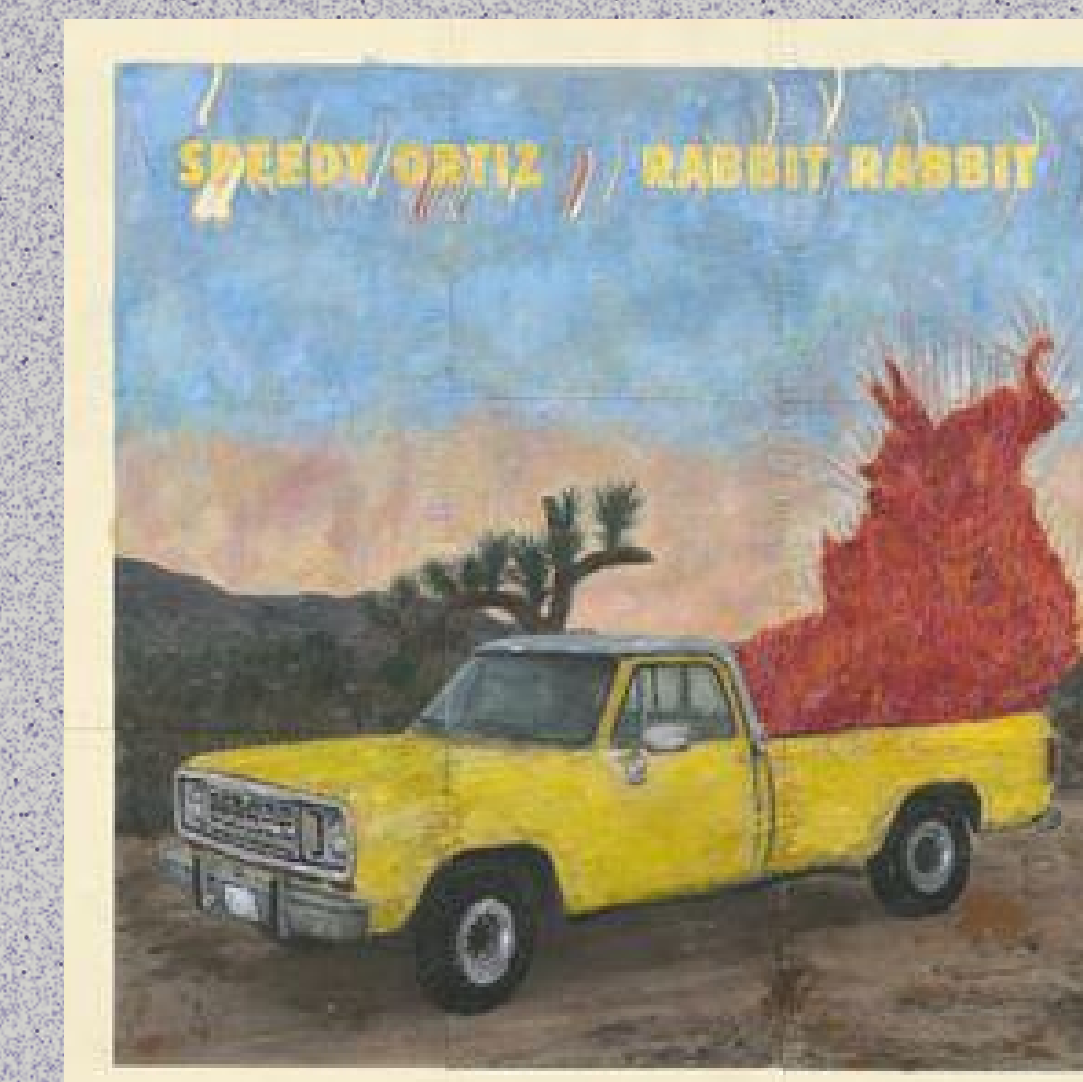


Vision Language Model

Overview

Album covers are an important part of the music experience, yet they remain largely inaccessible to blind and low-vision users. We fine-tuned an open-source vision-language model to generate accessible text alternatives for album artwork.

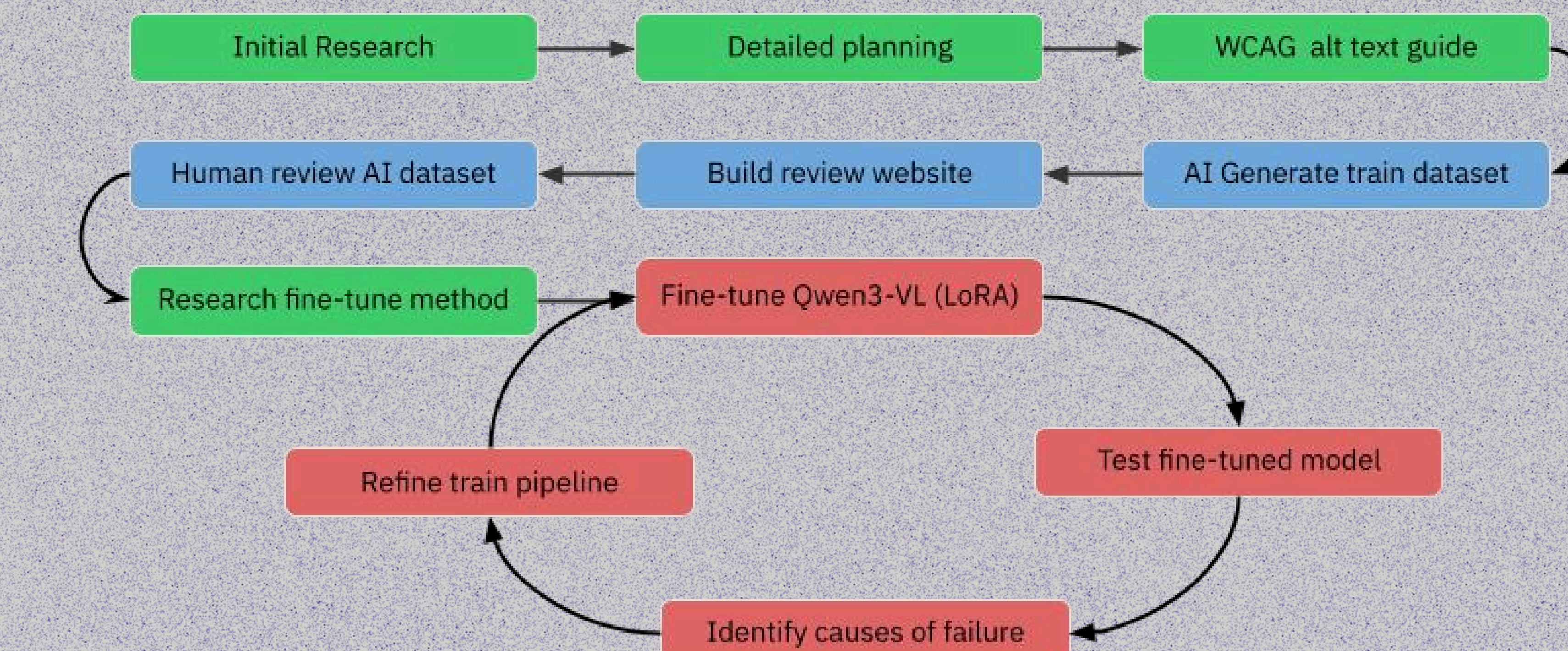
Tech Stack



Example

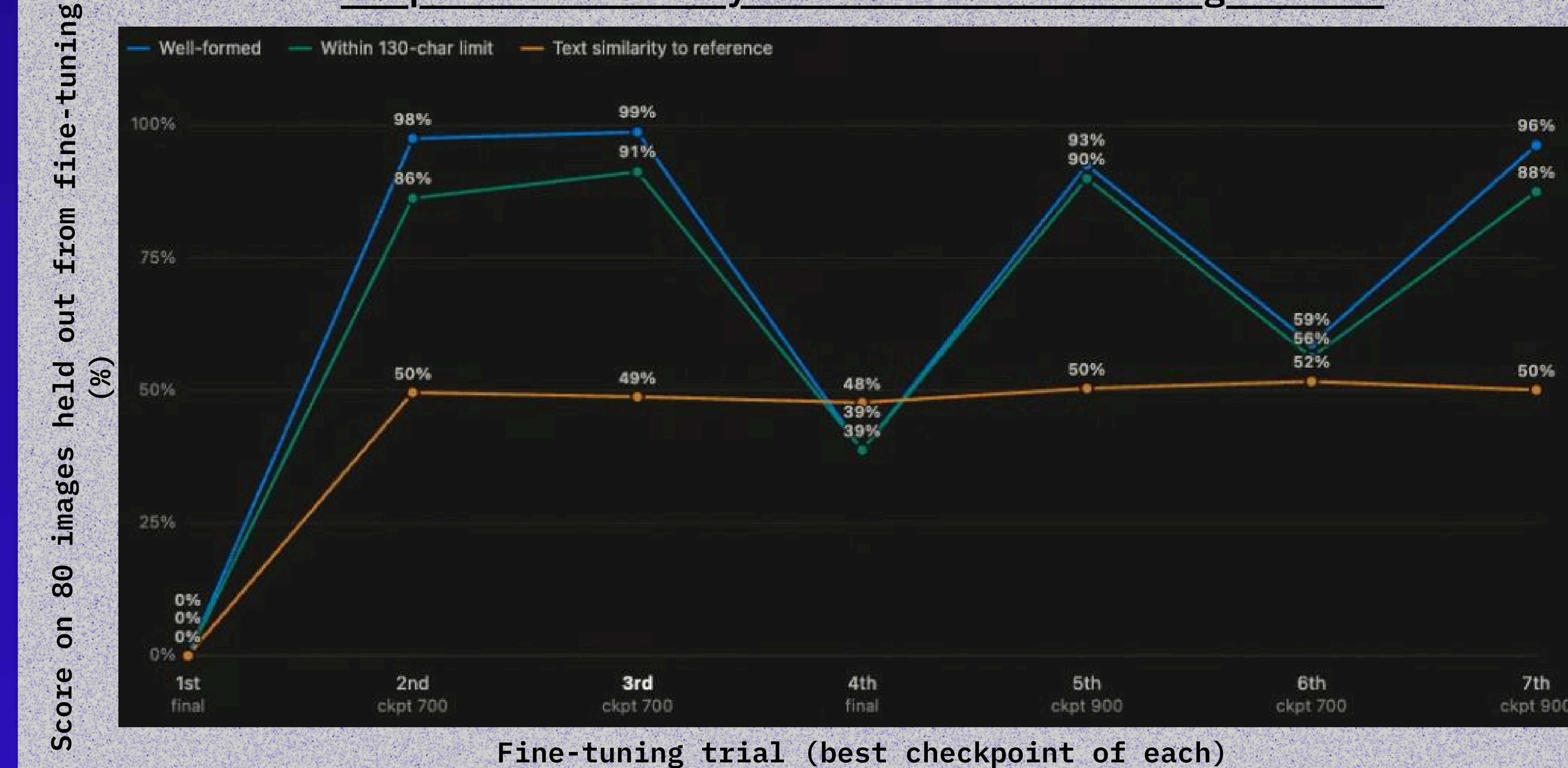
Alt text:
Yellow pickup truck carrying a large red spiky object in its bed; desert landscape background with Joshua trees; blue-orange sky.

Methodology



Results

Output Reliability Across 7 Fine-tuning Trials



Radio's Future

Software development

- Implement more features requested in UX research
- Work with WXDU to deploy mobile app in the fall

Vision Language Model

- Continue to fine-tune the model & generate alt text for covers in WXDU database
- Release our finalized LoRA adapters

Handoff & beyond

- Flesh out Code+ work and documentation in WXDU-owned GitHub organization
- Discuss contribution guidelines and long-term maintenance/access with WXDU computing team