Streamlining Accessibility Verification in Short-Term Rental Platforms: *A Computer Vision–Based Review Assistance System*

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Becoming rentABLE

Problem

Why verifying accessibility features in short-term rentals is challenging?

- Travelers with accessibility needs rely on accurate information about property features
- Accessibility organizations must manually review listing photos to verify accessibility features
- Manual photo review process is time-consuming, prone to errors, and difficult to scale

Approach

Our solution: a computer-vision–assisted review system

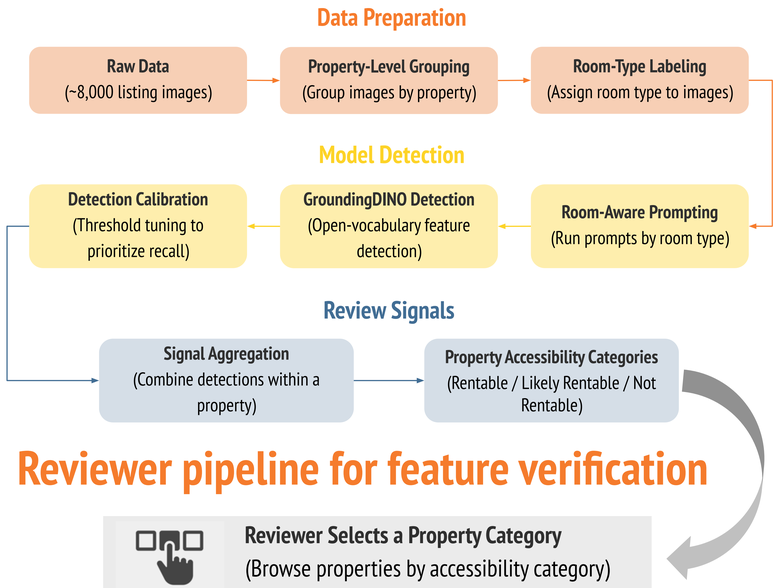
To address these challenges, we developed a **review-assistance system** that automatically detects and highlights potential accessibility features in listing photos to support accessibility verification.

System capabilities:

- Detect accessibility-related features from listing images using computer vision
- Highlight detected features with bounding boxes and confidence indicators
- Classify listings into accessibility categories (e.g., rentable, not rentable) to support faster review decision

Methods

Technical pipeline for feature detection



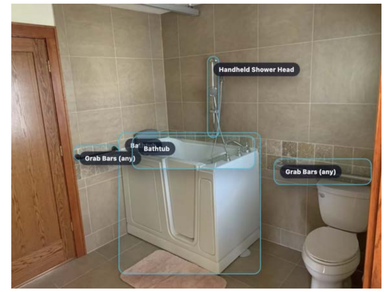
Reviewer pipeline for feature verification

Human-in-the-Loop Design: the system assists reviewers by surfacing visual evidence and organize into categories, while human reviewers make the final accessibility verification decisions.

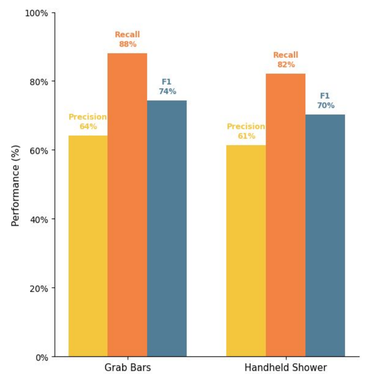
Results

Model accurately detects accessibility features in listing photos

- Multiple accessibility features (e.g., grab bars, bathtub, handheld shower) are correctly localized
- Detected features provide visual evidence used for accessibility assessment



High recall achieved for bathroom features



- The system prioritizes high recall to avoid missing accessibility features
- Performance is strongest for visually distinct fixtures (e.g., grab bars)
- False positives arise from visually similar objects (e.g., towel bars vs. grab bars)
- Detection performance strongly depends on image quality, angle, and scene composition!

Future Work

- Refine text prompts and detection settings for visual ambiguous features (e.g., roll-in showers)
- Improve host photo quality through clearer upload guidance (e.g., better framing)