

# The ORBIT India Dataset: Understanding the Challenges of Collecting a Disability-First AI Dataset in Low-Resource Environments

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## Abstract

Computer vision systems are increasingly used by blind individuals to navigate their lives, helping, for example, locate objects such as doors or chairs. Yet these recognition systems do not work for many personal objects a blind user might want to find, such as keys or a special notebook. In response, efforts created personalized recognition systems, where individuals train their phones to identify and locate things, like a coffee mug or white cane, using example images/videos. However, these tools are trained on data from high-resource contexts, not necessarily reflecting India's material culture. This paper discusses the contribution of the ORBIT-India dataset, which extends these tools to the Indian context, home of the world's largest blind population. The ORBIT-India dataset comprises 105,243 images from 587 videos, representing 76 unique objects. We use this experience to examine dataset collection practices translated from high- to low-resource settings, providing recommendations to support cross-geography dataset collection.

## CCS Concepts

• **Human-centered computing** → **Accessibility**.

## Keywords

AI, accessibility, datasets, teachable object recognition, vision impairment, Global South

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## 1 Introduction

Artificial Intelligence (AI) has growing potential to improve the lives of people with disabilities by removing barriers to everyday tasks, from navigating a shop to finding one's keys [19, 31, 40]. However, the majority of AI tools designed to support disability are trained on datasets collected in the Global North [11, 34, 42, 44, 63], reflecting the associated material cultures and environments. As training data is critical to performance [42, 44, 49], this can result in effectiveness disparities for those using these tools in other contexts. The research literature has clearly shown that AI systems often have poor performance for users in culturally diverse contexts in the Global South [10, 24, 37]. This raises the question as to how we might extend data collection efforts to include Global South contexts.

By extending *Find My Things*, a teachable object recognition system for people who are blind, to the Indian context, this paper explores how a dataset collection protocol designed for the Global North must be adapted to work well in the Global South. *Find My Things* [74] allows people who are blind to identify and locate essential personal items, such as coffee mugs, white canes, or school bags, by teaching their AI app with example videos. Unlike generic object recognisers, teachable object recognisers are trained and tested under consistent, user-specific conditions, reducing variability between training and testing data and enabling greater adaptability to the user's context without cross-user interference [39].

Despite *Find My Things*' potential for localisation, previous research has shown that object-recognition systems fail in low-resource settings across the Global South due to differences in home environments, object availability, and camera usage behaviours [37]. These failures point to the need for training data that better reflects the lived realities of diverse user populations. In particular, systems



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