
# Mobile Application Design and Development

# SE4041- 1 TrackSpace App Profile Document

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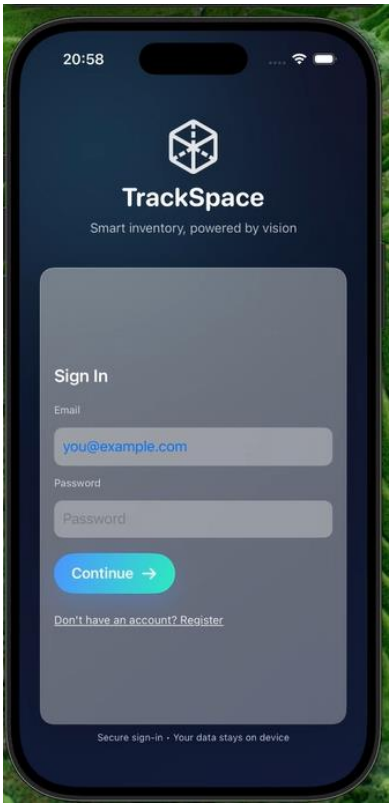
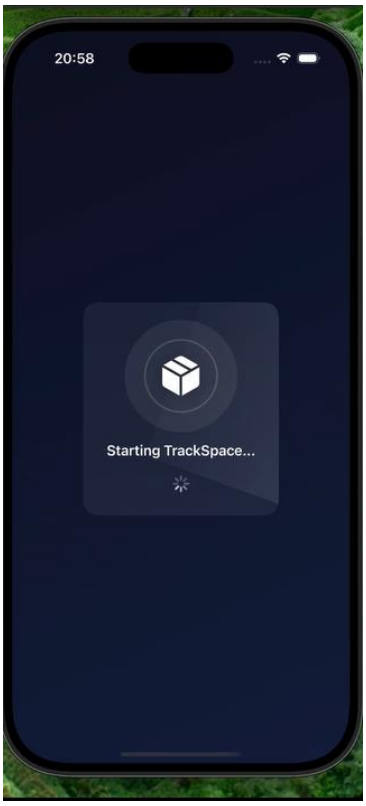
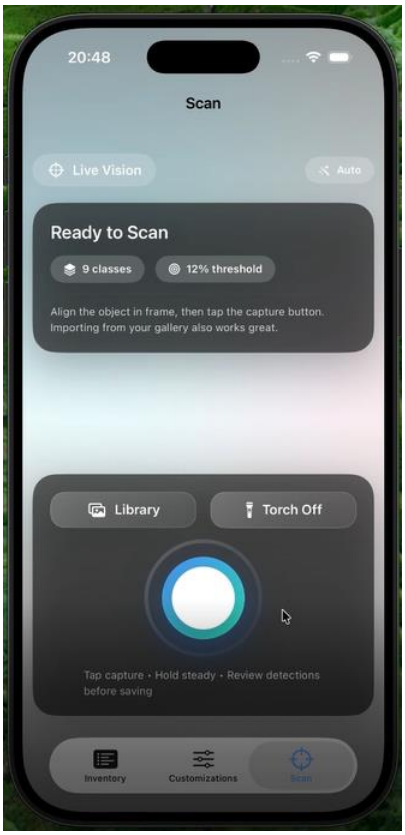

20:58
TrackSpace
Smart inventory, powered by vision
Sign In
Email
you@example.com
Password
Password
Continue →
Don't have an account? Register
Secure sign-in · Your data stays on device


20:58
Starting TrackSpace...


20:50
Review
vase
potted plant
cup
clock
Quantities
clock − 2 +
cup − 2 +
potted plant − 2 +
vase − 10 +
Location
Locations


20:48
Scan
Live Vision
Auto
Ready to Scan
9 classes
12% threshold
Align the object in frame, then tap the capture button.
Importing from your gallery also works great.
Library
Torch Off
Tap capture · Hold steady · Review detections
before saving
Inventory
Customizations
Scan


20:49
Review
chair
Quantities
chair − 10 +
Location
Locations
Add to Inventory


20:48
Presets
Custom
All Classes
Home
Vehicles
Foods
Living
12%
Classes
person
bicycle
car
Inventory
Customizations
Scan

# 1. Executive Summary / Quick Overview

App Name: TrackSpace

Tagline: Smart Object Scanning & Inventory Tracking Powered by On-Device AI

Purpose: TrackSpace allows users to scan real-world objects using an on-device YOLO model and automatically build a structured inventory.

Current Status: In development/prototype.

Target Audience: Home owners, small businesses, warehouse staff, students, and hobbyists needing quick object tracking without cloud dependency.

## 1.1 Problem & Solution

Problem: Managing physical items across rooms is tedious. Users forget where items are stored and cannot search a digital catalog because one doesn't exist.

Solution: TrackSpace uses on-device YOLO detection + Core Data storage to create a private, offline inventory system. Users scan an image, review detected objects, and save them instantly with location and thumbnails.

## 1.2 Features & Functionality

• AI Object Scanning – YOLO-based detection on-device.

• Detection Review – Adjust bounding boxes, edit labels, counts.

• Inventory Manager – Group items by room, edit, delete, increment counts.

• Local Image Store – Stores item thumbnails privately on device.

• Class Settings – Enable/disable detection categories, thresholds, custom icons.

• User Account (Local) – Minimal login/sign-out flow.

• Camera/Gallery Import – Scan live or analyze existing images.

Tech Stack: SwiftUI, Core ML, Vision, AVFoundation, Core Data, PhotosUI.

## 1.3 Target Audience & User Profile

Ideal Users:

• Age 18–50

• Students, makers, homeowners, warehouse workers

• Users who want offline inventory tracking

User Scenario:

A user scans a cluttered table. YOLO automatically identifies items such as 'bottle', 'remote', 'book'. User adjusts counts and saves them to the room 'Living Room'. Later, the user searches inventory to locate items quickly.

## 1.4 Market & Competition

Market Opportunity: Object tracking + home organization apps are growing with AR/AI. Approx. TAM ~$5B globally with rising demand for digital cataloging.

Competitors:

• Sortly – Cloud-based, expensive.

• Google Photos Object Search – Not inventory-focused.

• Home Inventory Apps – Mostly manual input.

TrackSpace Advantage:

• On-device AI (no cloud).

• Fully offline privacy.

• Simple workflow: Scan → Review → Save.

## 1.5 Business Model & Monetization

Future Options:

• Free app with Pro upgrade.

• Pro features: unlimited rooms, higher-resolution storage, export to CSV, multi-device sync.

• No ads for privacy focus.

## 1.6 Architecture Summary

Core Layers:

• UI Layer – SwiftUI views (ScannerView, InventoryView, DetectionReviewView)

• ML Layer – YOLODetector handling MLMultiArray decoding and preprocessing

• Persistence Layer – AssetScanStore (Core Data) + ImageStore for JPEG storage

• Helper Utilities – Theme, UI components, Notifications

Key Files:

YOLODetector, ContentView, ScannerView, DetectionReviewView, InventoryView, ClassSettings, ImageStore, AssetScanStore.

## 1.7 Team & Contact Information

Developer: Thiyura Thilakshana

Contact: thiyura@gmail.com

Platform: iOS (SwiftUI, Xcode)