

Minutiae

Document one minute of every day. Forever.

ROLE	TYPE	YEAR
Engineering & Design	Mobile App	2025

CHAPTER 01

The Platform


30,000+ daily active users. One minute a day.

Anti-Social

The mechanic is minimal. Every day, at a randomly assigned minute, you have 60 seconds to photograph whatever is in front of you.

If a stranger captures that same moment anywhere in the world, your images are swapped anonymously.

1,440 moments map every minute of a day. When you've filled them all, Minutiae turns your archive into physical books and custom posters.

 Minutiae overview

Main interface and reference

Scale

Tens of thousands of simultaneous writes every time a moment fires.

12+ Firebase database instances. Silent push to route around Firebase Auth's 18,000 token refresh per minute limit. v1/v4/v5 matching algorithm evolution.

 Grid view

Grid view of captured moments

CHAPTER 02


Shop Backend

From broken prototype to production

The Broken Prototype

What I inherited: A folder named `minutiae_stripe_test`. Single JavaScript Express file. Products stored as in-memory objects.

No Firestore. No type safety. No Stripe webhook signature validation. Nothing could be deployed.

 Exchange moments

Anonymous moment exchange

The Rebuild

8-Module Architecture

`catalog` / `checkout` / `pricing` /
`normalization` / `location` / `store` /
`status` / `webhook` — TypeScript, Firebase
Cloud Functions v2

Stripe End-to-End

Session creation → webhook receipt →
signature verification → Firestore
persistence → iOS polling. Separated
shared webhook secrets. Fixed
WKWebView User-Agent blocking.

Device Validation

iOS 18.1 → Stripe Test Checkout →
webhook → Firestore `shop_orders {`
`status: completed }` → iOS success screen

CHAPTER 03


Poster Pipeline

Automated constellation poster generation

The Concept

Each photo becomes a point on a sky map. Captured moments arranged like constellations.

The poster is unique to each user, authored by their actual daily life rather than generated from a template.

 Constellation poster

Generated constellation poster

The System

Flask Web Console (port 5050): task queue, status monitoring, 5-stage state machine — designed for non-technical operators.

Image Pipeline: GCS download → Pillow avatar processing → Selenium + Headless Chromium rendering p5.js canvas → PIL 3-layer compositing → ~5,000×8,000px PNG

Docker Compose, smoke tests, documented dependency chain: `tz-resolver` → `moments-service` → `json_processor`

Why Headless Chrome

The constellation poster uses p5.js — a JavaScript canvas animation library. No server-side equivalent produces identical output.

Selenium drives headless Chromium: loads HTML, waits for animation completion, captures canvas as image.

 Capturing

Capturing the moment

CHAPTER 04

Growth

App Store optimization and visual design

The Impact

Researched keyword performance with Sensor Tower and Google Search Console. Redesigned App Store screenshots to sequence comprehension. Refined title, subtitle, keyword strategy.

+300 DAU/week from product page updates.

+500 DAU/week from broader internship contributions.

 App Store

App Store product page

Minutiae

Engineering and design. From broken prototype to production system.
From manual process to automated pipeline. From data to growth.