

Tabla: Restaurant Discovery Website

An HCI Design & Evaluation Report

Course: CS5015 — Human Computer Interaction

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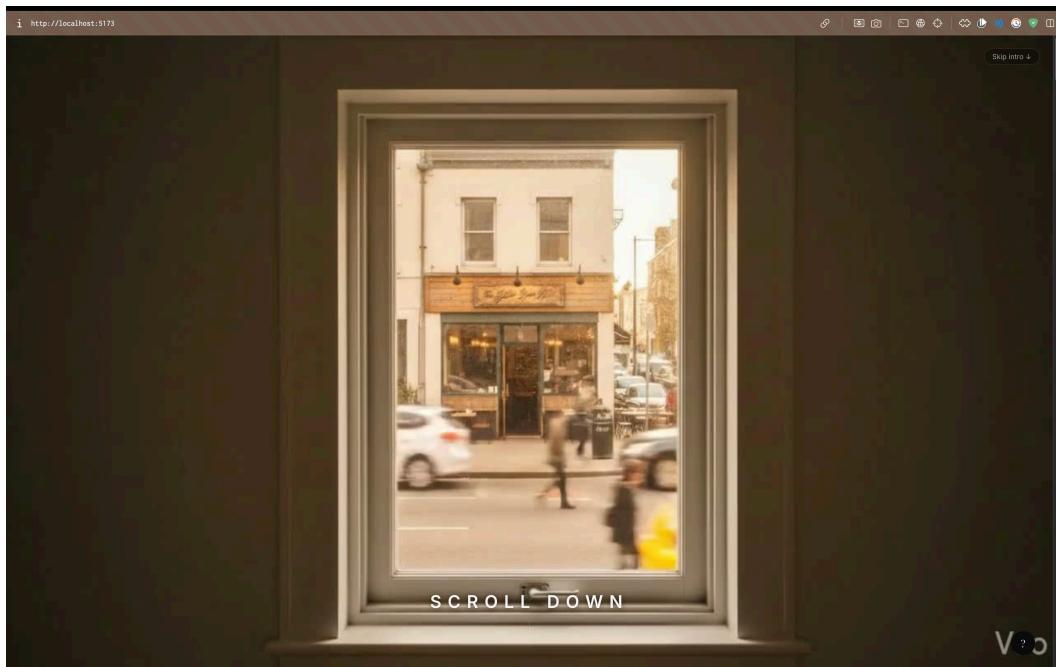


Figure 1: Tabla — Cinematic Landing Page (Sequence 1)

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1 Website Overview

1.1 Purpose and Target Users

Tabla is a full-stack single-page restaurant discovery application for urban food enthusiasts in Chennai, Mumbai, and Bangalore. Three primary user types: **Casual Diners** (search by cuisine/location), **Fine-Dining Planners** (filter by rating, price, ambiance), and **Deal Hunters** (time-limited discounts).

1.2 Core Features

(1) Cinematic frame-by-frame intro scroll (Seq. 1 & 2) via canvas renderer. (2) Smart restaurant grid with real-time search, multi-dimensional filters, lazy-loaded images. (3) Three-step reservation modal (date/time, guest count, email confirmation). (4) SPA navigation across six tabs: Explore, Near Me, Cuisines, Saved, Deals, Sign In. (5) Keyboard shortcut overlay, skip intro, review modal, persistent favourites.

1.3 UI Walkthrough



Figure 2: Cinematic Intro — Sequence 2

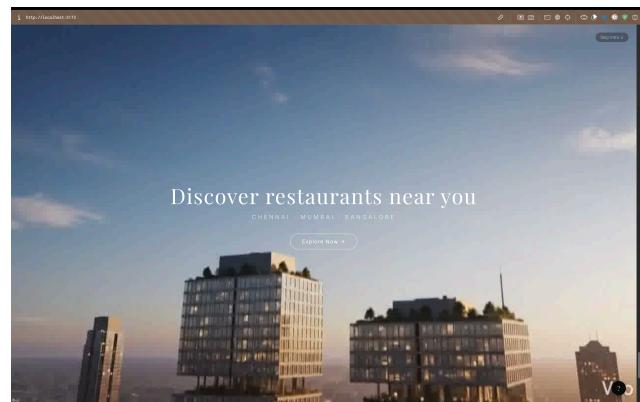


Figure 3: Cinematic Intro — Sequence 3

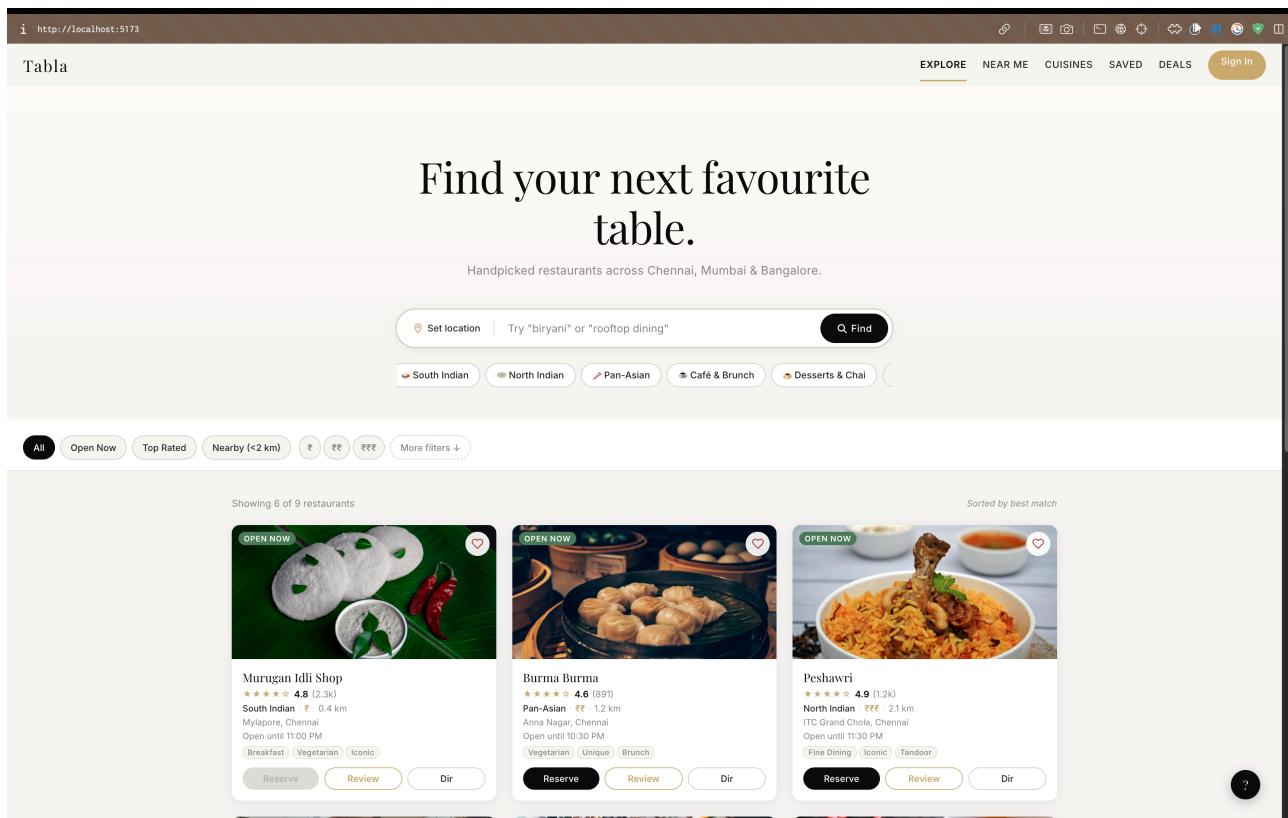


Figure 4: Main App — Hero Search & Quick Filter Bar

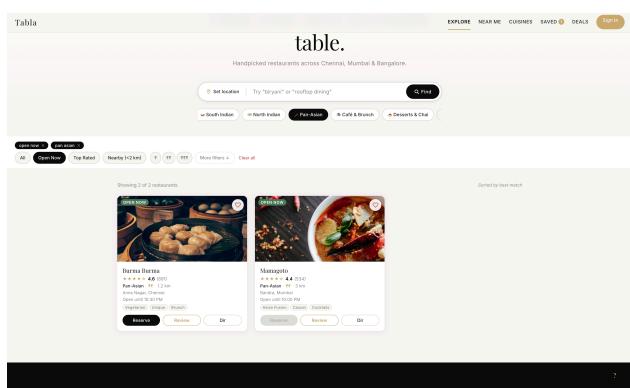


Figure 5: Advanced Filter Drawer

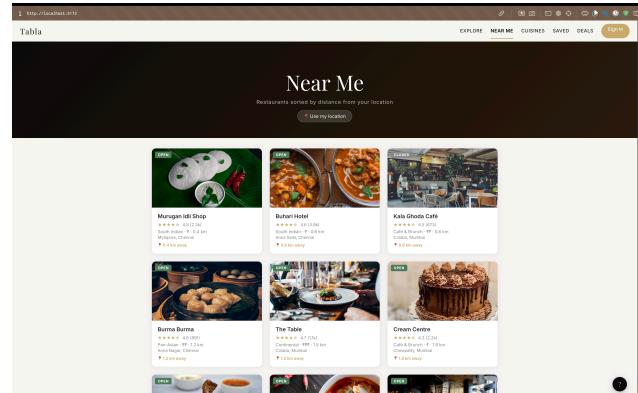


Figure 6: Near Me Tab — Geo-sorted list

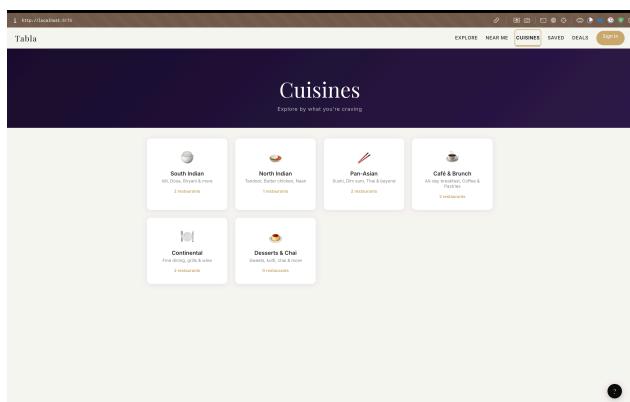


Figure 7: Cuisines Tab — Category cards

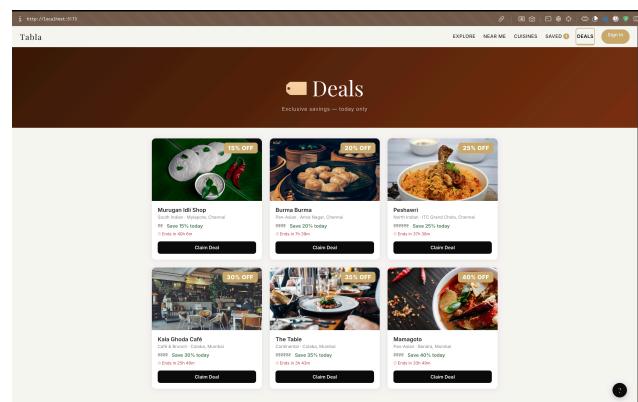


Figure 8: Deals Tab — Countdown timers

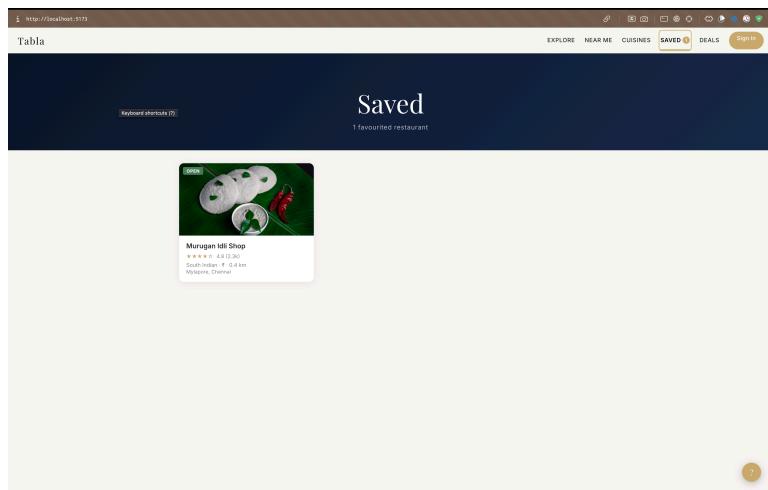


Figure 9: Saved Tab — Favourited restaurants

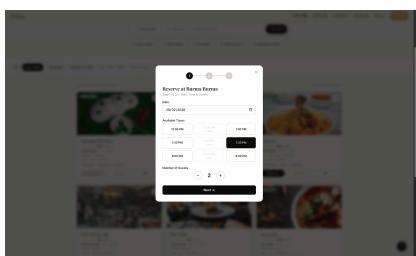


Figure 10: Reservation Step 1

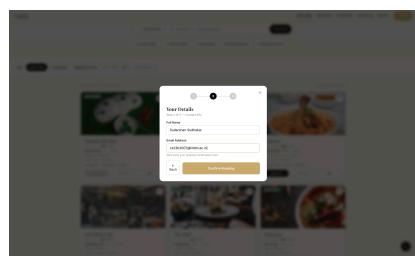


Figure 11: Reservation Step 2

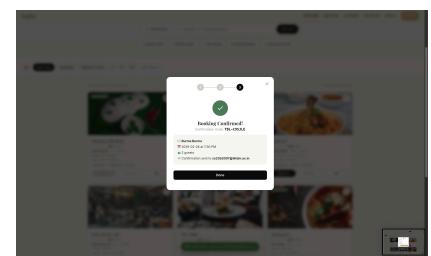


Figure 12: Reservation Step 3

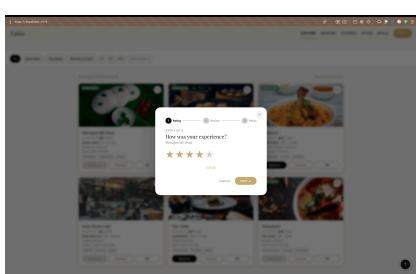


Figure 13: Review Modal Step 1

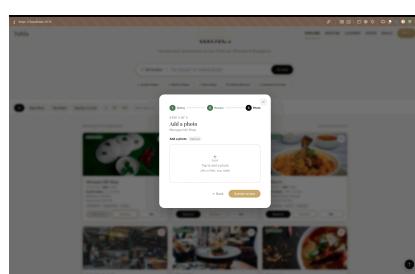


Figure 14: Review Modal Step 2

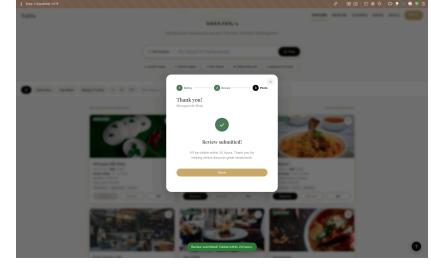


Figure 15: Review Modal Success

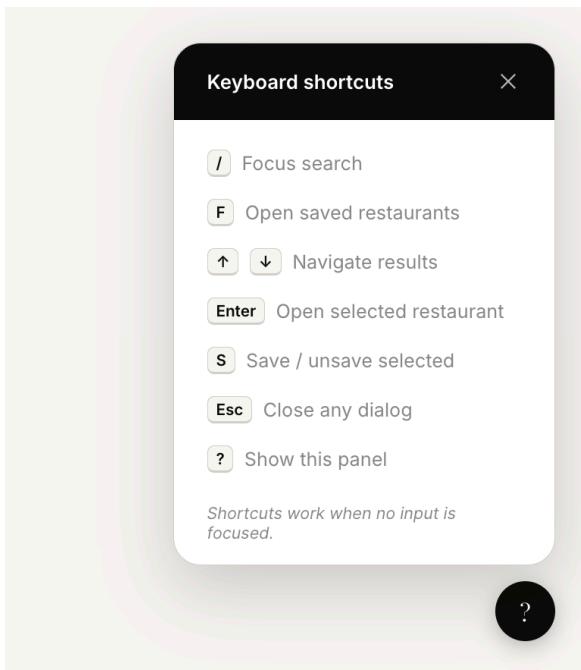


Figure 16: Keyboard Shortcut Overlay

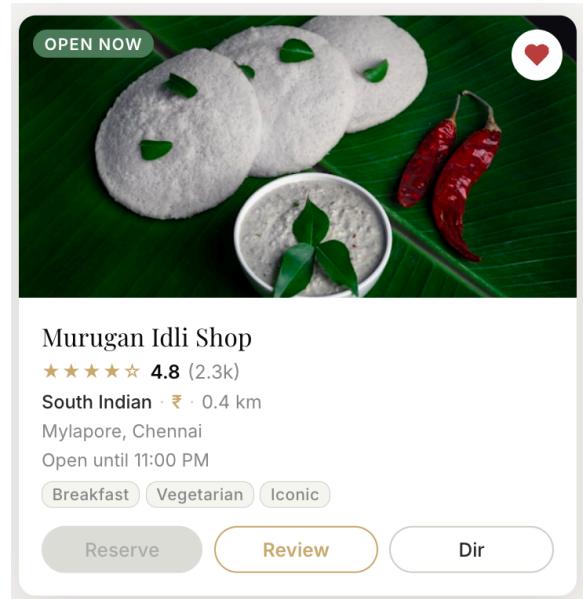


Figure 17: Heart/Favourite Toggle

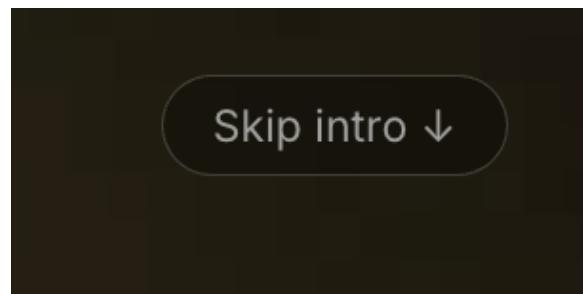


Figure 18: Skip Intro Button

2 Yelp HCI Violations — and How Tabla Fixes Them

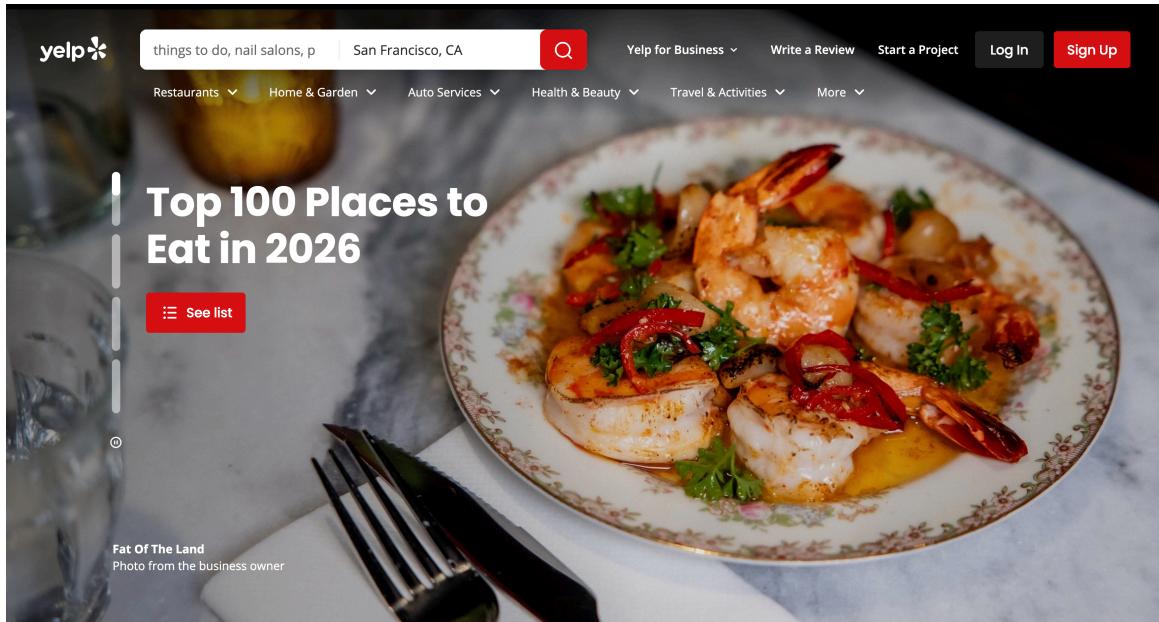
This section presents five HCI design-law violations observed on Yelp (early 2026), each paired with how Tabla addresses the same concern.

2.1 V1 — Hick's Law: Choice Overload

Fix: Single-Focus Hero

Law (Lec 07, p.8–9): Decision time $\propto \log_2(n + 1)$ choices. More options = more delay.

Yelp's Violation: The landing page simultaneously displays 20+ category icons, two search bars, promotional banners, and editorial carousels. Users are overwhelmed before forming intent (see Fig. 19).



Recent Activity

Figure 19: Yelp Landing — Information overload violating Hick's Law

Tabla Fix: A single full-screen hero presents exactly *one* action (search bar). Secondary cuisine chips are limited to five (within the 7 ± 2 rule). Progressive-disclosure hides advanced filters behind “More Filters ↓”. This also satisfies **Nielsen H8 — Aesthetic & Minimalist Design** (Lec 03, p.8).

2.2 V2 — Fitts's Law: Tiny Action Buttons

Fix: 44px Targets

Law (Lec 07, p.4–7): $MT = a + b \log_2(2A/W)$. Larger, closer targets are faster to acquire.

Yelp's Violation: “Write a Review”, “Add Photo”, and “Save” are sub-16 px icon-only buttons in a narrow row, far from the content column — especially problematic on mobile (Fig. 20).

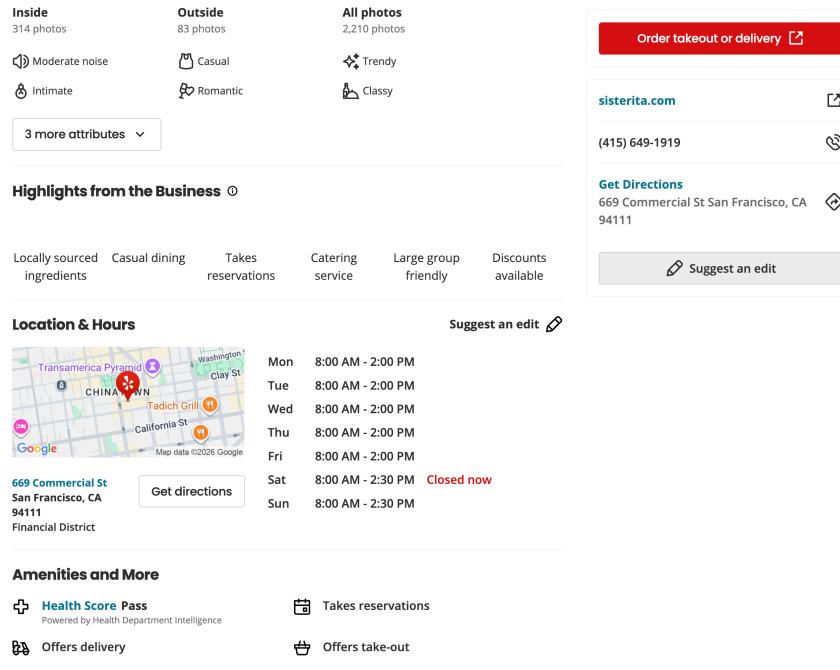


Figure 20: Yelp Restaurant Detail — Small buttons violating Fitts’s Law

Tabla Fix: Reserve, Review, and Directions buttons span full card width at ≥ 44 px height. The primary “Find” button is placed directly adjacent to the search input (zero extra travel). Destructive actions (clear filters) are intentionally small per Fitts’s inverse.

2.3 V3 — Jakob’s Law: Non-Standard Navigation

Fix: Industry Conventions

Law (Lec 02, p.9; Lec 08, p.7–8): Users import mental models from other sites — they prefer what they already know.

Yelp’s Violation: Profile, notifications, and saved collections are buried inside a hamburger menu; slug-based URLs break browser back-navigation (Fig. 21).

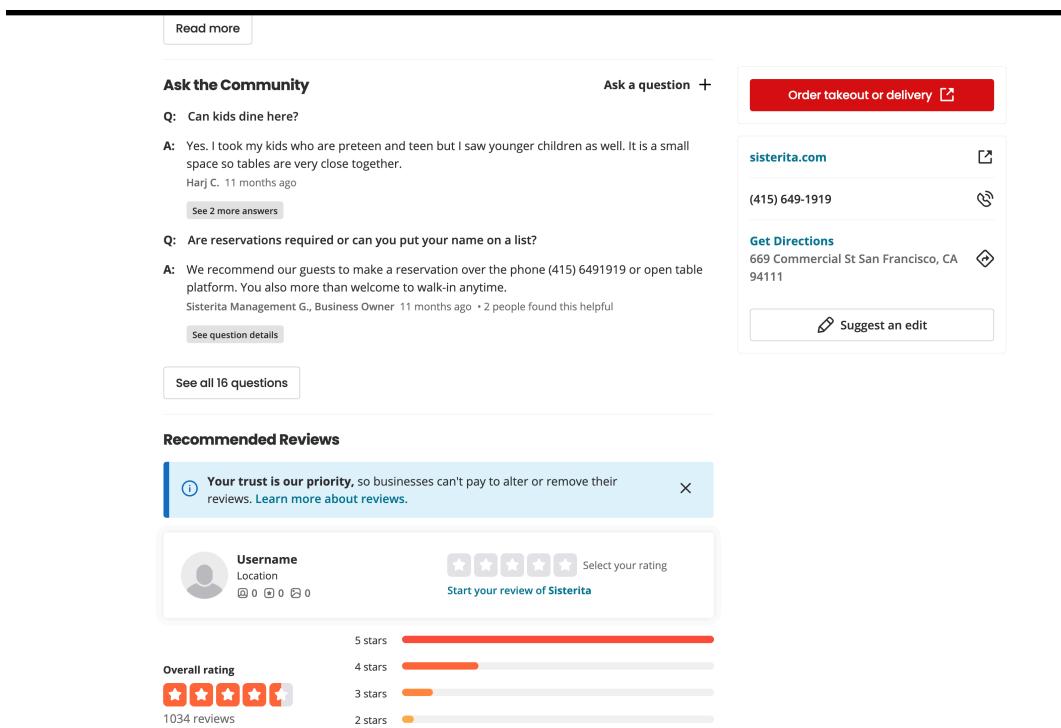


Figure 21: Yelp Restaurant Page — Unconventional layout violating Jakob's Law

Tabla Fix: Sticky top-nav mirrors Zomato/Swiggy/Google Maps. Heart icon (Instagram/Airbnb convention), star ratings, price symbols (/ /), and a three-step reservation flow (OpenTable convention) all leverage existing mental models.

2.4 V4 — Miller's Law: 30+ Uncategorized Filters

Fix: Chunked Groups

Law (Lec 07, p.1): STM holds 7 ± 2 chunks; Primacy & Recency effect (Lec 07, p.2–3) causes middle-option blindness.

Yelp's Violation: 30+ cuisine/ambiance checkboxes in one flat scrollable list with no grouping (Fig. 22).

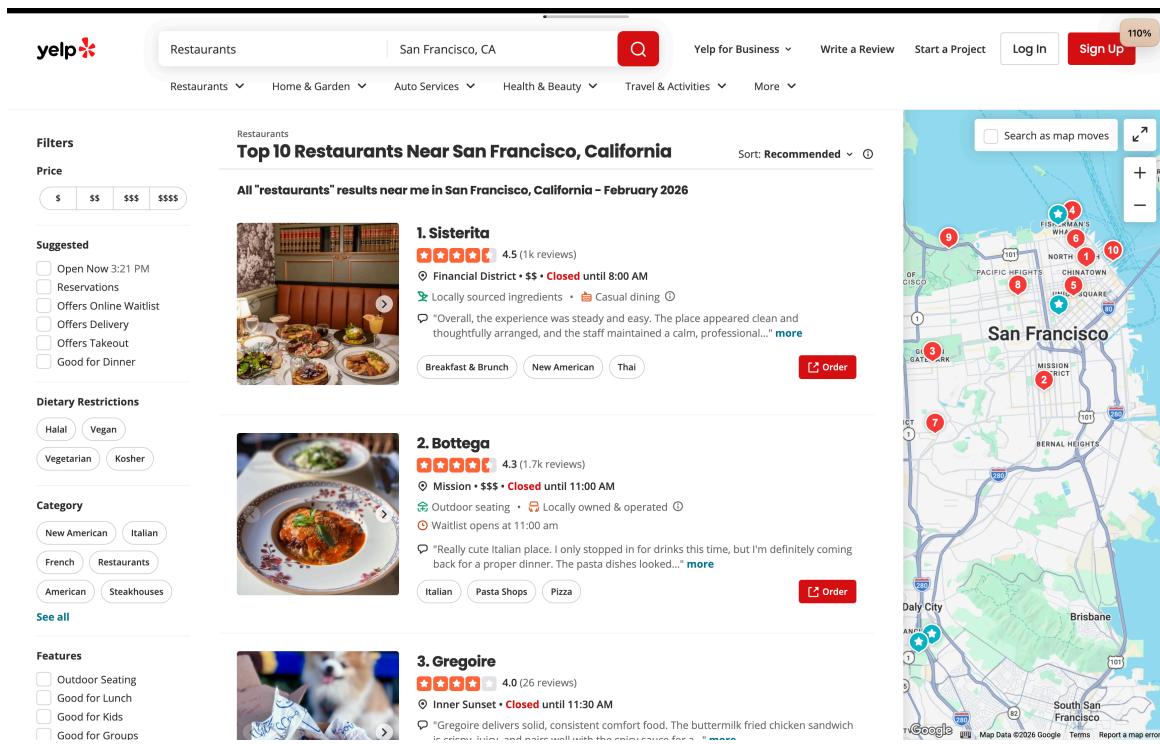


Figure 22: Yelp Grid — Excessive uncategorised filters violating Miller's Law

Tabla Fix: Filters are chunked into four logical groups: Quick (4 chips), Price (3 tiers), Cuisine (6 cards), Advanced (drawer). Each group stays within 7 ± 2 . Restaurant cards show exactly 6 fields; filter tags are capped at 3 per card.

2.5 V5 — Nielsen H1 & Norman Feedback: Silent Confirmations

Fix: Persistent Status

Law (Lec 03, p.6, p.9): The system must always keep users informed; Shneiderman Rule: “Offer Informative Feedback” and “Design Dialogs for Closure” (Lec 03, p.2).

Yelp’s Violation: Review submission shows a 2-second text banner then vanishes. Photo upload progress shows only a spinner — no percentage. No persisted “submitted” state (Fig. 23).

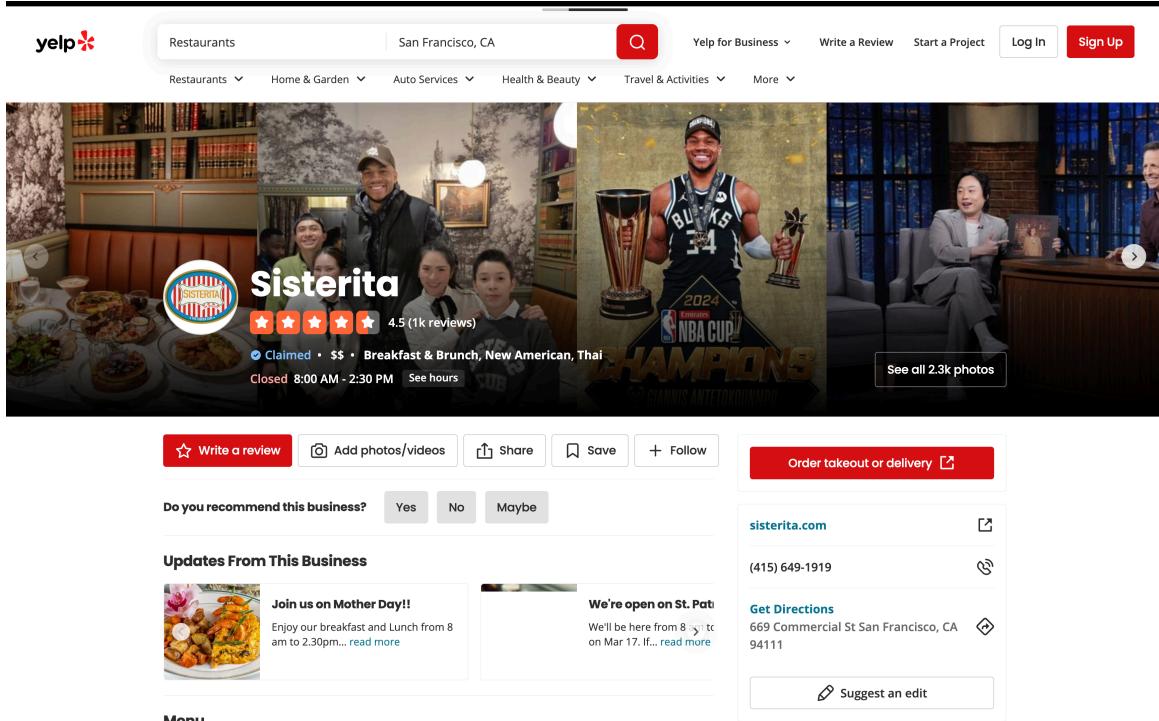


Figure 23: Yelp Review Area — Insufficient feedback violating Nielsen H1 & Norman Feedback

Tabla Fix: Reservation ends with a persistent confirmation screen (animated checkmark + booking code). Review flow ends with a “Review submitted!” success screen. Toast notifications use colour-coded states (green/amber/red). A progress bar ($0\% \rightarrow 100\%$) shows cinematic frame loading in real time. “Open Now/Closed” badges give live status on every card.

3 Design Laws Applied in Tabla

The following subsections detail every HCI principle, law, and heuristic intentionally implemented in Tabla, with course-slide references.

3.1 Fitts's Law [Lec 07, p.4–7]

$MT = a + b \log_2(2A/W)$. Target acquisition time decreases with larger width and shorter distance. *Applied:* 48 px “Find” button adjacent to search input (zero extra movement); 44 px full-width Reserve/Review/Dir buttons; centrally placed 44 px Skip Intro; destructive “clear” as a small text link (intentionally hard to mis-tap).

3.2 Hick's Law [Lec 07, p.8–9]

Decision time $\propto \log_2(n + 1)$. *Applied:* One primary hero action; five cuisine chips; four quick-filter options; six nav tabs ordered by usage frequency (Explore first, Sign In last).

3.3 Miller's Law — 7±2 Rule [Lec 07, p.1]

STM holds 7 ± 2 chunks. *Applied:* 6 card fields; ≤ 3 tag chips per card; 6 nav tabs; 5 shortcuts in overlay; time slots chunked into Lunch and Dinner blocks of 4–5 each.

3.4 Jakob's Law [Lec 02, p.9; Lec 08, p.7–8]

Users prefer sites that match their existing mental models. *Applied:* Logo at far-left sticky nav; heart for favourites; star + price symbol rating; three-step reservation mirroring Booking.com / OpenTable.

3.5 Gestalt Principles

Proximity (Lec 05): card actions grouped at card-bottom; chips in a single row. **Similarity**: all primary buttons share dark-oval style; all chips share rounded-pill shape. **Figure-Ground**: high-contrast wordmark over semi-transparent cinematic overlay. **Closure**: card images at consistent 220 px height — no bottom crop ambiguity. **Continuity**: filter strip implies left-to-right scan from “All” to “Nearby”. **Common Region**: each card is a rounded-rect with drop shadow forming one logical unit; modals use blurred overlay separating them from the page.

3.6 Progressive Disclosure [Lec 06, p.4; Lec 08]

Show only essential information; reveal advanced options on demand. *Applied:* “More Filters ↓” hides dietary/ambiance/distance controls; reservation discloses one step at a time; review uses a three-step wizard; Cuisines tab reveals filtered list only after clicking a category.

3.7 Feedback Principle & Visibility of System Status [Lec 03, p.6, 9]

System must always inform users via appropriate feedback. *Applied:* Real-time progress bar during cinematic preload; “Scroll Down” animated indicator; colour-coded toast notifications (green/amber/red); “Open Now/Closed” badge on every card; ARIA label toggles on heart icon.

3.8 Tesler's Law — Conservation of Complexity [Lec 08, p.9–10]

Irreducible complexity must be absorbed by the system, not pushed to the user. *Applied:* Reservation modal handles table-availability computation, date validation (`min = today`), and booking-code generation internally — user provides only 3 inputs.

3.9 Doherty Threshold — 400 ms [Lec 08]

Productivity is maintained when system response is <400 ms. *Applied:* Skeleton loader appears at 0 ms (`SKELETON_DELAY_MS = 600`); search results rendered within 400 ms (`SEARCH_SKELETON_MS = 400`); filter changes re-render grid synchronously on each click.

3.10 Aesthetic-Usability Effect

Aesthetically pleasing designs are perceived as more usable. *Applied:* Cinematic frame-scroll intro; Playfair Display + Inter typography; gold accent `#C9A96E`; 8 px grid; card hover shadows; 800 ms opacity transitions; animated confirmation checkmark.

3.11 Recognition over Recall [Lec 03, p.4, 7]

Users should recognise options rather than retrieve them from memory. *Applied:* Cuisine emoji identifiers; / / price symbols; star ratings; keyboard shortcut overlay (press ?); active tab underlined + bold.

3.12 Peak-End Rule

Experiences are judged by their most intense moment and ending. *Applied:* *Peak* — cinematic frame-by-frame intro creates memorable first impression. *End* — reservation confirmation features animated green checkmark + booking code; review flow ends with “Review submitted!” success screen.

3.13 Von Restorff Effect — Isolation Effect

Items that stand out are remembered better. *Applied:* “OPEN NOW” badge in vivid green (`#4A7C59`); gold “Reserve” button distinct from outline “Review” and “Dir”; amber deal percentage badges in bold 800-weight text.

3.14 Error Prevention & Recovery [Lec 03, Nielsen H5/H9]

Prevent errors; help users recover gracefully. *Applied:* “Next” disabled until time slot selected; date `min = today`; inline email regex validation; sign-in error banner without page navigation; autosaved review drafts (Raskin’s 1st Law — Lec 08, p.1–3).

3.15 Consistency and Standards [Lec 03, Nielsen H4; Shneiderman R1]

All primary actions use dark-background, white-text, 8 px-radius buttons. All modals share backdrop blur, border-radius, and close-button position. Toasts always appear bottom-right; section headers follow the same hero-gradient + h1 pattern.

3.16 Occam's Razor / Simplicity [Lec 08, p.10]

The simplest sufficient design is preferred. *Applied:* Hero contains only the site name, one tagline, one search bar. Skip Intro is a two-word label. Cards omit phone/address — accessible via “Dir” when intentionally sought.

3.17 Pareto Principle & Zipf's Law [Lec 07, p.12–14]

80% of usage comes from 20% of features; the most-used action should be cheapest to perform. *Applied:* Search, Reserve, and Favourite occupy the most prominent positions and largest touch targets. Advanced filters and keyboard shortcuts are accessible but de-emphasised.

3.18 Accessibility & Inclusive Design [WCAG AA]

ARIA roles (`banner`, `search`, `main`, `progressbar`) and `aria-label` on every control; colour contrast $\geq 4.5:1$ (WCAG AA); all elements keyboard-focusable with `:focus-visible` ring; “Skip to main content” as first DOM element; Escape dismisses all modals.

3.19 Shneiderman's 8 Golden Rules [Lec 03, p.1–4]

Rule	Tabla Implementation
Strive for consistency	Uniform button styles, modal patterns, toast colours
Shortcuts for power users	? opens overlay; Cmd+K focuses search
Informative feedback	Toast notifications, progress bar, skeleton loaders
Design for closure	Reservation & review each end with success screen
Error prevention	Disabled “Next” until slot selected; inline validation
Locus of control	Skip Intro; clear filters anytime; obvious close
Reduce memory load	Emoji, stars, symbols, always-visible tab labels
Reduce short-term memory	6 card fields, ≤ 5 chips, ≤ 6 nav tabs

3.20 Raskin's Laws [Lec 08, p.1–6]

Law 1 (Data Safety): Review modal autosaves draft text to prevent accidental loss. **Law 2 (Efficiency):** Geolocation auto-fills the Near Me tab; cuisine pill click on the hero directly filters the grid. **Law 3 (Humane UI):** Single locus of attention per screen — modals disable background scrolling.

3.21 Scroll & Fold Behaviour [Lec 06, p.1–4]

80% of user attention is above the fold. *Applied:* Hero search bar and CTA are fully above the fold; the animated “Scroll Down” indicator (false-floor prevention, Lec 06, p.4) signals additional content. After skipping intro, `revealMainApp()` scrolls the hero to top (zero extra scroll, Fitts-consistent).

3.22 Horizontal Attention — Left Lean [Lec 05, p.3–5]

Users' primary attention skews left-centre. *Applied:* Logo and search bar are placed left-centre; the restaurant card image (the highest-attention element) occupies the left portion; “Open Now” badge overlays the top-left of each card image.

4 Implementation Architecture

4.1 Technical Stack

TypeScript + Vite SPA with zero external UI libraries. Key modules: `main.ts` (cinematic scroll), `grid.ts` (card renderer + filter engine), `pages.ts` (SPA router), `reservation.ts` (booking modal), `integration.ts` (cross-module event bus), `nav-hero.ts`, `accessibility.ts`, `shortcuts.ts`, `toast.ts`, `review.ts` (draft autosave).

4.2 Cinematic Scroll Mechanics

Three scroll phases over a canvas element rendering individual frames (`seq1/0001.jpg → seq2/0120.jpg`): **PHASE_SEQ1** (wordmark fade-in), **PHASE_BLUR** (quote interlude), **PHASE_SEQ2** (cities + Explore CTA). At progress ≥ 1 or Skip click, `revealMainApp()` executes an 800ms CSS opacity transition and scrolls to top.

4.3 Information Architecture

Tabla

Cinematic Intro (Seq1 → Blur → Seq2 → Main App)

Main App

Explore - Hero Search, Filter Bar, Restaurant Grid
→ Reserve Modal / Review Modal

Near Me - Geo-sorted list

Cuisines - Category grid → filtered list

Saved - Favourites (localStorage)

Deals - Discount cards with countdown timers

Sign In / Profile

5 User Personas & Task Analysis

Persona 1 — Priya (26, Urban Professional, Chennai): Uses Tabla 4–5×/week for lunch planning. Values speed and open-status accuracy. iPhone, primarily Search + Near Me.

Persona 2 — Anand (34, Fine Dining Planner, Mumbai): Visits 1×/week for special occasions. Values rating credibility, price tier, table reservation. MacBook Safari.

Persona 3 — Meera (22, Budget Traveller, Bangalore): Checks Deals tab first. Values discount transparency and countdown timers. Android Chrome.

Primary Task — Find & Reserve: Land on intro → Skip/Explore → search → scan grid → Reserve → Date/Time/Guests → Contact → Confirmation code.

Secondary Task — Browse by Cuisine: Cuisines tab → select category → browse filtered list → Reserve or Save.

6 Slide Reference Map & Additional Principles

The table below maps every design law used in Tabla to its course-lecture source. Rows marked \star are **extra principles** integrated beyond core lecture content.

Principle / Law	Lecture	Page(s)	Key Insight & Tabla Application
Usability — 5 E's	Lec 01	7	Easy, Efficient, Effective, Enjoyable, Easy-to-remember
Affordance	Lec 01	12	Objects signal permissible operations; buttons look tappable
Visibility	Lec 01	12	Controls map clearly to effects; tab labels always visible
Mental Models	Lec 02	1–4	User beliefs shape interaction; Tabla mirrors familiar apps
Jakob's Law	Lec 02	9; Lec 08 p.7–8	Heart, stars, symbols all from known conventions
Skeuomorphism	Lec 02	9–10	Familiar real-world metaphors; booking flow mirrors physical reservation
8 Golden Rules	Lec 03	1–4	Consistency, Feedback, Closure, Control, Error prevention
Nielsen 10 Heuristics	Lec 03	6–8	H1 Status, H4 Consistency, H5 Error Prev, H7 Flexibility, H8 Minimalist
Norman's Design Rules	Lec 03	9–10	Feedback, Constraints, Mapping, Consistency, Affordance
Usability Dimensions	Lec 04	1–2	Learnability, Efficiency, Memorability, Errors, Satisfaction
Horizontal Attention Left	Lec 05	3–5	Logo & search bar left-centre; card image left
Gestalt Principles	Lec 05	—	Proximity, Similarity, Figure-Ground, Closure, Continuity, Common Region
Scrolling & Fold	Lec 06	1–4	Hero above fold; animated scroll indicator (false-floor prevention)
False Floor Warning	Lec 06	4	“Scroll Down” indicator invites scrolling past intro
Miller's Law (7 ± 2)	Lec 07	1	6 card fields, ≤ 5 chips, ≤ 6 tabs
Primacy & Recency	Lec 07	2–3	Explore first, Sign In last in nav
Fitts's Law	Lec 07	4–7	44px targets, proximal placement, $MT = a + b \log_2(2A/W)$
Hick's & Hyman's Law	Lec 07	8–9	One hero action; progressive-disclosure for extras
Pareto Principle (80/20)	Lec 07	12–13	Search/Reserve/Favourite are the prominent 20%
Zipf's Law / Least Effort	Lec 07	14	Most frequent action cheapest to perform

Principle / Law	Lecture	Page(s)	Key Insight & Tabla Application
Raskin's Law (Safety)	1 Lec 08	1–3	Review draft autosaved; no accidental data loss
Raskin's Law 2 (Efficiency)	Lec 08	4–5	Geolocation auto-fills Near Me; cuisine pill filters directly
Raskin's Law 3 (Humanity)	Lec 08	6	Single locus of attention; modal disables background scroll
Jakob's Law (full)	Lec 08	7–8	Design to existing conventions
Tesler's Law	Lec 08	9–10	System absorbs booking computation; user gives 3 inputs
Occam's Razor	Lec 08	10	Hero: name + tagline + search only
★ Aesthetic-Usability Effect	Extra	—	Cinematic intro, gold palette, transitions raise perceived quality
★ Doherty Threshold (<400 ms)	Extra	—	Skeleton loaders at 0 ms; results \leq 400 ms
★ Peak-End Rule	Extra	—	Cinematic peak; animated confirmation end
★ Von Restorff Effect	Extra	—	Green Open badge, gold Reserve button stand out
★ Progressive Disclosure	Extra	—	“More Filters” drawer; step-by-step modals
★ WCAG AA Accessibility	Extra	—	ARIA roles, 4.5:1 contrast, focus rings, skip-link
★ Recognition over Recall	Extra	—	Emoji, symbols, shortcut overlay

6.1 Usability Testing Plan

Method: Think-aloud protocol (one session per persona). **Tasks:** (1) Find an open South Indian restaurant in Chennai. (2) Reserve for 4 at Burma Burma tomorrow. (3) Claim a deal. (4) Sign in and locate saved restaurants. **Metrics:** Task completion rate ($>90\%$), time-on-task, error rate, SUS score (>80), NPS.

Metric	Target	Method
Search-to-result latency	\leq 400 ms	performance.now() profiling
First Contentful Paint	\leq 1.5 s	Lighthouse audit
Reservation completion	\geq 90%	Observation
SUS Score	\geq 80	SUS questionnaire
Accessibility (Lighthouse)	\geq 95%	Automated audit
Font contrast ratio	\geq 4.5:1 AA	WebAIM Contrast Checker

6.2 Limitations & Future Work

Mock restaurant data; demo sign-in (`tabla123`); “Dir” opens Google Maps (embedded map view planned); pseudo-random time slots (real availability API needed); full VoiceOver/NVDA audit pend-

ing; localisation (Tamil, Hindi) not yet implemented.

6 References

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