```
PRIZEPICKS PREDICTIONWEBSITE/
            -- ImageWithFallback.jsx
            -- MobileLayout.jsx
            --- PlayerAnalysisSearch.jsx
            -- PlayerStatsModal.jsx
```

```
-- ScreenshotUploader.jsx
- README.md
```

#### More information on every File:

#### backEnd/

	File	Purpose in one glance	Key responsibilities / notes
app.py		Flask API gateway	• Boots the Flask server, enables CORS, and initializes Firebase Admin.• Hosts routes such as /api/parse_screenshot (OCR) and /api/player (full analysis).• Persists results to Firestore and returns JSON to the front-end.

backtester.py	Historical profit-and-loss simulator	• Scans prior processedPlayers/* docs, applies a simple bet-settlement rule, and builds a P&L Series.• Useful for validating the model or generating performance charts in notebooks.
<pre>chatgpt_bet_explainer.py</pre>	Natural-language "Why this bet?" generator	• Crafts a prompt with player stats + probabilities, calls the OpenAl ChatGPT API, and returns a concise explanation.• Cached in Firestore so each pick is explained only once.
injury_report.py	Live injury-status scraper	• Pulls the NBA's official daily injury feed (or a mirrored JSON).• Normalizes status (Out, Q, P) and injury details, returning a clean dict keyed by NBA player ID.• Consumed by player_analyzer.py to adjust probabilities.
main.py	Cloud-Run entry-point + cron helpers	• Exposes app for Gunicorn <b>and</b> contains scheduled logic that: – polls recent box scores; – moves finished picks from <i>active</i> → <i>concluded</i> ; – updates user bet history.
monte_carlo.py	Python wrapper around native Monte-Carlo engine	• Fetches $\leq$ 60 recent games $\rightarrow$ computes $\mu$ , $\sigma \rightarrow$ runs 100 000 sims.• Prefers the ultra-fast shared lib libmontecarlo . so (see below) but can fall back to NumPy.
player_analyzer.py	Master data wrangler & feature builder	• Queries nba_api for season stats, last-5 logs, playoff data, opponent strength, etc.• Calls injury_report, volatility.forecast_volatility, prediction_analyzer.poisson_over_prob, and monte_carlo.monte_carlo_probability.• Bundles everything into a dict that the front-end cards expect.
prediction_analyzer.py	Math helpers (Poisson & misc.)	<ul> <li>Implements closed-form Poisson "≥ threshold" calculation.</li> <li>Provides thin wrappers invoked by player_analyzer and feeds into chatgpt_bet_explainer.</li> </ul>
volatility.py	GARCH(1,1) volatility forecaster	• Builds a 50-game (or playoff-only) series of point "returns", fits arch_model, and returns 1-step-ahead $\sigma$ .• Output stored as volatilityForecast / volatilityPlayOffsForecast.

screenshot_parser.py	OCR extractor	<ul> <li>Accepts base-64 images, calls OpenAl Vision, parses player / threshold pairs, and returns them to app.py.</li> </ul>
requirements.txt	Python dependency list	• Flask, nba_api, arch, firebase-admin, openai, etc.—installed in Stage 2 of the Docker build.
<pre>mc_stub.c &amp; montecarlo.ml</pre>	Native speed layer for Monte-Carlo	• montecarlo.ml $\to$ OCaml routine that performs the random draws.• mc_stub.c bridges Python $\leftrightarrow$ OCaml via ctypes, producing libmontecarlo.so during the Docker build.
Dockerfile	Two-stage container build	Stage 1 (OCaml): 1. Starts from ocaml/opam, installs  OCaml + ctypes. 2. Compiles montecarlo.ml into a PIC object, compiles mc_stub.c, links both into  libmontecarlo.so.  Stage 2 (Python runtime): 1. python:3.9-slim, installs libffi and Python deps from requirements.txt. 2.  Copies the compiled .so and all back-end source files. 3.  Launches Gunicorn (CMD gunicorn app:appbind 0.0.0.0:\${PORT:-8080}).

# frontEnd/

File	Purpose in one glance	Key responsibilities / notable details
tailwind.config.js	Design-system config for Tailwind CSS	• Specifies content scan globs (index.html, all files under src/) so unused classes are purged from production builds.• Extends the default theme with custom breakpoints (xs 475 px to 2xl 1536 px), extra spacing steps (18, 88, 128), a granular font-scale (xs → 4xl), and utilities like minHeight.touch (44 px iOS tap target) and maxWidth.mobile (100 vw).• Adds reusable animations & keyframes – slide-in/out, fade-in/out, spin, pulse – referenced by class names such as animate-slide-in-right.• No additional plugins loaded; relies solely on Tailwind core.

# frontEnd/public/

File Purpose in one glance

Key details

mobile-viewport.
html

Mini HTML shim that forces mobile-friendly scaling and blocks pinch/double-tap zoom • Declares a restrictive <meta name="viewport" ...> so the SPA renders at 100 % width on phones.• Inline IIFE listens for touchstart (multi-touch) and touchend events to preventDefault()—stopping iOS pinch-zoom and the 300 ms double-tap zoom gesture.• Contains no UI markup; it simply injects these behaviors before the React bundle mounts.

#### frontEnd/src/pages

File Purpose in one glance Key responsibilities / notable elements Main dashboard SPA DashboardPage.jsx Wrapped in AppLayout so header, nav, earnings (picks + search + upload) banner, and warning banner are always visible. Hosts PlayerAnalysisSearch, ScreenshotUploader, current-picks panel, DailyPicks, active-bet section, BetSlip, BetConfirmation, and modal stack (PlayerStatsModal, EditBetModal). • Loads user profile, active bets, bet history, and legacy picks from Firestore; moves completed bets to history on mount.• All navigation is handled via useNavigate(); page is mounted at /dashboard and is the post-login landing route. Dedicated gallery of ProcessedPlayersPage.jsx • Uses AppLayout. • Renders ProcessedPlayers server-processed players component and passes onAddToPicks to let users queue cards directly into their pick list.. Loads any legacy picks for de-duplication, enforces 6-pick max, and persists additions with addUserPick. Poute: /processed-players. Bet history & active wagers PreviousBetsPage.jsx • Uses AppLayout.• Displays ActiveBet list center (editable / cancellable) followed by PreviousBets accordion built from Firestore bet history. On mount, moves completed bets from active → history and refreshes both lists; provides EditBetModal, PlayerStatsModal for deeper actions. • Route: /previous-bets.

AlertsPage.jsx		Notifications / alerts hub	<ul> <li>Uses AppLayout. Thin wrapper that mounts Notifications; future iterations will hydrate from user-specific subscriptions. Route: /alerts.</li> </ul>
SignIn.jsx		Simple username + password login screen	• Stylized form with show-password toggle.• On submit, verifies credentials via getUserByUsername, runs bootstrap (initializeUser, initializeDatabase) if needed, stores currentUser in sessionStorage, then redirects to /dashboard with useNavigate().• Still seeds the demo user on first mount.
frontEnd/src/			
File	Purpose in one glance	Key r	esponsibilities / notable details
App.css	Global styling + mobile-first overrides	• Sets the global shell: #root max-width 1280 px, centered with zero padding, left-aligned text.• Keeps Vite starter styles: logo hover/ spin animation, .card padding, .read-the-docs gray text.• Removes the previously bloated mobile overrides—Tailwind utility classes in the new components now handle responsiveness.• Adds a slim mobile-only block (max-width: 768px) that just enforces 44 px minimum touch targets and font-size: 16px on form controls to prevent iOS zoom.	
App.jsx	Top-level React router	legacy redirect by pointing	→ DashboardPage,
firebase.js	Front-end Firebase initializer	Exports Firestore instance	n Vite env variables and calls initializeApp().• db and, in browser environments only, SR or Node tests don't break.
index.css	Tailwind layer injection	Simply imports @tailwing custom styles live in individ	d base, components, and utilities; actual lual component .css files.

main.jsx

React entry point rendered by Vite

• Boots the app via createRoot().render(<StrictMode><App /></StrictMode>).• Pulls in index.css so Tailwind styles apply globally before any component mounts.

### frontEnd/src/components/

File	Purpose in one glance	Key responsibilities / notable UI behavior
PredictionCard.jsx	Mini card that surfaces the model's score prediction for <i>one</i> player	• Shows threshold, computed probability and Poisson probability.• Colors the <i>Recommendation</i> banner green / yellow / red based on prediction.category ("Almost guaranteed", "Neutral", "Riskey").
PreviousBets.jsx	Accordion list of a user's completed and in-flight wagers	• Splits view into Active Bets and Completed Bets sections.• Click to expand → reveals pick details, result hit/ miss chips, and P&L.• Local expandedBets state tracks which items are unfolded.
processed-players.css	Hover & animation helpers for <i>ProcessedPlayers</i> grid	• Adds scale-up shadow on .player-card:hover and a reusable .pulse key-frame for success confirmations.• General transition rules applied to buttons & expandable sections.
ProcessedPlayers.jsx	Searchable / filterable gallery of players already analyzed server-side	• Fetches docs via getProcessedPlayers() then lets users search, filter by team, and filter by AI recommendation from three drop-downs.• Confirmation
RecommendationCard.jsx	Lightweight "quick verdict" box used inside the analysis modal	• Derives OVER/UNDER & confidence (High / Medium) from basic averages vs threshold.• Shows Poisson probability and icon-based sentiment (□ green / □ red).

ScreenshotUploader.jsx	Drag-and-drop widget that parses PrizePicks images, then chains player analysis	• Supports multi-file drag-and-drop and click-to-browse; shows image previews with type & size badges and per-file remove/X.• Simulates progress to 95 %, calls /api/parse_screenshot, then sequentially POSTs each parsed {player, threshold} to /api/player while updating row status chips (spinner → ♥//X).• Handles error banners, success banners, Clear All, and clears previews after processing.
StatsCard.jsx	Detailed stat panel inside the analysis modal	• Displays season avg, last-5 avg, vs-opponent avg, home/away avg.• Inline table of last 5 games, color-coded vs threshold.• "See More" button opens modal paginated (10 per page) over up to 15 games, with lazy "Load more games" pagination.
thinking-animation.css	Re-usable pulse animation for ChatGPT "thinking" loader	• .thinking-dot staggered dot pulse and .thinking-ring breathing ring key-frames.
ThinkingAnimation.jsx	Centered loader component shown while awaiting Al response	• Uses the above CSS to render a gradient ring, three pulsing dots, and explanatory blurb ("Gathering player statistics").• Accepts optional text prop (default "Analyzing").
TrendingPicks.jsx	Static demo card of "most popular picks"	Currently hard-codes an array of three players with popularity %, threshold and recommendation; renders with icons & team info.
FavoritePlayers.jsx	Empty-state panel for future "starred" players	• Renders a grid of favorite player tiles once data exists; for now shows a big prompt and "Add Players" CTA button using Lucide icons.
ImageWithFallback.jsx	Re-usable <img/> wrapper that never breaks	Attempts primary src; on onError swaps to fallbackSrc (or /placeholder.svg) so broken images don't wreck the layout.

InjuryStatusCard.jsx	Rich card that visualizes a player's latest injury report	• Three states: no data, found on report, healthy.• Maps status → color (red = Out, yellow = Questionable, green = Probable/Available).• Shows reason, game date/time, and matchup when available.
MonteCarloCard.jsx	Explains the Monte-Carlo simulation result for a threshold	• Displays probability (green / yellow / red), distribution type, and an info blurb with a chart icon.• Parses string or numeric inputs and formats to ## . ## %.
Notifications.jsx	Placeholder settings panel for future alerts	• Static copy describing upcoming features (game-start, performance, result alerts).• Disabled toggle switches communicate "coming soon."
PlayerAnalysisDashboard.jsx	In-page deep-dive dashboard shown after a search	• Hero banner with photo, logos, matchup info, Al recommendation chip, threshold, Poisson and Monte-Carlo %s.• Key-stats tiles (season avg, last 5, vs-opponent, home/away), volatility tiles, playoff tiles.• Expandable sections for all-season encounters, recent games, playoff log; "Load more games" fetches via /api/player/{id}/more_games.• Formats numbers/percents, color-codes vs threshold, and exposes Add to Picks.
PlayerAnalysisModal.jsx	Full-screen modal version of the above dashboard	• Same data logic but scrolls inside a modal; close button, add-to-picks icon, expandable sections.• Accepts playerData, onClose, onAddToPicks props; fetches extra games lazily.

PlayerAnalysisSearch.jsx	Smart search bar that drives the analysis flow	• Autocomplete-style form with recent-search dropdown (localStorage), search-tips panel, and live validation.• Saves top 5 searches, includes info & history icons, and shows error/loader states under the form.• Emits onSearch(player, threshold); parent supplies loading/error props.
PlayerCard.jsx	Simple summary card for list views	Shows photo, team/opponent logos, ranks, next-game info—used in processed players & search suggestions.
PlayerStatsModal.jsx	Lightweight modal for viewing bet details from <i>Previous Bets</i>	• On mount, tries to hydrate from Firestore (getProcessedPlayer) for richer stats; falls back to passed prop.• Presents threshold, recommendation, timings, and (if available) season / last-5 / vs-opponent averages and actual result.
AdvancedMetricsCard.jsx	Shows eFG %, 3-pt shot share, FT-rate & splits	• Renders advanced metrics grid plus career-season table.• Includes an info call-out explaining each stat.
ApiTest.jsx	Connectivity checker for the Flask API	Calls testAPI() on mount, shows     ChatGptThinking loader until response, then prints success or error with a Retry button.
BetConfirmation.jsx	Post-submission modal summarizing a locked bet	• Displays platform logo, bet amount, potential winnings, and a scrollable list of selected picks; closes on Done or <b>≭</b> .
BetExplanationCard.jsx	Al narrative block ("Why this bet?")	Chooses up/down/warning icon & colors from recommendation, shows ChatGPT text plus Poisson & Monte-Carlo % s, with fallback No Recommendation state.
BetSlip.jsx	Full-screen wizard to assemble & confirm a wager	• Lets user pick platform, bet type, amount, choose which picks to include, and computes potential winnings; fires onConfirm with formatted picks.

chatgpt-thinking.css	Dot-pulse & logo-glow animation for loaders	• Defines .chatgpt-thinking-dot key-frames and .logo-pulse halo.
ChatGptThinking.jsx	Loader component that uses the above CSS	Shows ChatGPT logo + 3 pulsing dots and optional status text.
DailyPicks.jsx	"Today's picks" & performance tracker panel	• If no picks: friendly empty state.• Otherwise lists each locked pick, game details, and a mini KPI row (count / winnings / bet amount).
EditBetModal.jsx	Modal to tweak an existing bet before settlement	Lets user change amount, platform, bet type & which picks are included; recalculates winnings; validates at least one pick selected.
AppLayout.jsx	Shared top-level layout wrapping all main pages	• Desktop header with nav links; mobile header + slide-in menu using Lucide icons and stateful mobileMenuOpen.• Highlights active route via useLocation(), displays warning banner ("Play at your own risk") and earnings banner.• Fetches user profile (avatar, display name, earnings) on mount; handles sign-out and auth guard redirection.
MobileLayout.jsx	Responsive shell that swaps between a desktop sidebar and a collapsible mobile drawer	• Navigation buttons now call navigate() (React Router) instead of local state; highlights current route.• Sticky mobile header with hamburger / close icon toggles drawer; desktop sidebar fixed 64 px wide.• Wraps {children} so any page can inherit the layout.

MobileOptimizedDashboard.jsx	All-in-one mobile dashboard workflow (pick list → search → stats)	• Shows Your Picks panel with lock-in, remove and live count (picks.length / 6).• Responsive analysis form (player + threshold) and analyze button.• Renders PlayerCard, StatsCard, RecommendationCard, last-5 games table, and Add to Picks CTA after a search.• Uses props for all handlers so state lives one level up.
MobilePlayerCard.jsx	Compact player-info tile for small screens	• Displays photo (with fallback), name, team, position, team / opponent playoff ranks, and next-game info.• Fully responsive flex layout that stacks on narrow widths.
ActiveBet.jsx	Expandable card summarizing an in-progress wager	Header shows pulsing alert icon; Edit and Cancel buttons invoke prop callbacks.     Clicking header toggles expanded view showing metadata & pick list; pick clicks surface deeper player info.     Status color: Final = green, Live = yellow, default = gray.

# frontEnd/src/scripts/

File	Purpose in one glance	Key responsibilities / notable elements
mobile-viewport.js	Forces proper mobile scaling when the main app is loaded from /public/mobile-viewport.	• Immediately-invoked function checks whether a <meta name="viewport"/> already exists; if not, it injects one with initial-scale=1, maximum-scale=1, and user-scalable=no to lock the zoom level.
use-mobile-detecto r.js	Lightweight React hook to tell components "are we on a phone?"	• Keeps an isMobile state that is true when window.innerWidth < 768 px.• Listens for resize events so the flag updates dynamically if the user rotates or resizes the window.
initDatabase.js	One-time Firestore seeder for local/dev demos	<ul> <li>When executed, creates a demo user bryanram (with a basic profile), admin site-wide stats, and an admin user list document if they don't already exist.</li> <li>Uses serverTimestamp() so created/last-login times are server-authoritative.</li> </ul>

migrateData.js Script to reorganize legacy user docs into the new schema usern and w

• Reads the old flat user document, rolls username/password/email into a nested profile object, and writes it back via updateDoc.• Splits historic bets array into activeBets and month-bucketed betHistory sub-collections, transforming each bet to the new field names along the way.

#### frontEnd/src/services/

File		Purpose in one glance	Key responsibilities / notable elements
api.js		Thin wrapper around your Flask back-end	• Single exported helper analyzePlayer(playerName, threshold) that POSTs to /api/player. • Cleans / type-casts the threshold, maps legacy field names (nba_player_id → playerId, etc.) and inserts fall-back images so the UI never breaks. • Ensures dates are ISO-formatted and provides default "Unknown Team/Opponent" strings when the back-end response is incomplete.
firebaseService.js		Firestore data-access layer	Auth / profile helpers - getUserByUsername, verifyUserPassword, getUserProfile, updateUserProfile.Stats & picks - updateUserStats, addUserPick, removeUserPick, getUserPicks, clearUserPicks.Bet management - createBet, getActiveBets, cancelActiveBet, updateActiveBet, getBetHistory, getAllBetHistory.Schema utilities - initializeDatabase and initializeUser set up or migrate user docs to the new profile-first structure; migrateData.js relies on these.Processed players - getProcessedPlayers & getProcessedPlayer pull the shared analysis docs for dashboard views.

#### functions/index.js - Firebase Cloud Functions triggers

Export	Fires when	What it does
onPlayerStatusCha nge	A document under processedPlayers/players/active/{docId} is updated	• If the field gameStatus flips to "Concluded" the function moves that document into processedPlayers/players/concluded/{docId} and deletes it from active—keeping the two sub-collections mutually exclusive.

onActiveBetWrite	A user's bet is written at users/{userId}/activeBets/{betId} (create / update / delete)	<ul> <li>When the bet is deleted or its status transitions to a terminal state (Concluded, Completed, Won, Lost) the pick is copied into users/{userId}/betHistory/{betId} with a settledAt server timestamp, then removed from activeBets.</li> </ul>
onUserPicksUpdate	The top-level user doc users/{userId} is updated	• Compares the previous picks array to the new one; if any picks now have gameStatus: "Concluded" they're filtered out so the array only contains still-live picks—preventing stale cards from showing up in the UI.

# injury\_report\_fn/

File	Purpose in one glance	Key responsibilities / notable elements
full_injury_report.py	Deep PDF scraper that converts the NBA's official daily-injury PDF into clean JSON	• Re-creates the NBA's PDF URL based on the most recent "eastern-time" release window (reports drop 12 p.m./5 p.m./8 p.m. ET). • Downloads the PDF, opens it with pdfplumber, and uses explicit x-coordinates to pull a column-perfect table. • Normalizes team names, splits camel-cased headings, swaps "Lastname, Firstname" → "Firstname Lastname," and strips line-breaks from the Reason column. • Exposes two helpers: • get_full_injury_report() → list ⊂ {gameDate, gameTime, team, player, status, reason} for every entry. • get_player_status(name) → quick lookup returning {status, reason} (or "NOT YET SUBMITTED" if a team hasn't filed).

main.py

Cloud-Function handler that keeps Firestore documents in sync with real-time game status • Utility fetch\_game\_status() hits nba\_api's ScoreboardV2 & BoxScoreTraditionalV2 to see whether a game has started, is live, or has finished—and, if finished, grabs the player's final points. • check\_active\_players() walks the processedPlayers/players/active collection; if fetch\_game\_status() returns new info, it calls update\_doc() to patch the Firestore doc (e.g., set "gameStatus": "Concluded" and "finalPoints": n). • Stubs for check\_user\_picks() and check\_active\_bets() illustrate the same pattern for user bet docs. • check\_games\_handler(request) is the HTTP entry-point wired to Cloud Scheduler (runs every hour); it invokes check\_active\_players() and responds 200 OK or 500 on error.