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

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-- 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 and 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 μ , $\sigma \rightarrow$ 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.)	 Implements closed-form Poisson "≥ threshold" calculation. Provides thin wrappers invoked by player_analyzer and feeds into chatgpt_bet_explainer.
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 σ .• Output stored as volatilityForecast / volatilityPlayOffsForecast.

screenshot_parser.py	OCR extractor	 Accepts base-64 images, calls OpenAl Vision, parses player / threshold pairs, and returns them to app.py.
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 & 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/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

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Main dashboard SPA (picks + search + upload)

• Wrapped in AppLayout so header, nav, earnings 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.

ProcessedPlayersPage.jsx

Dedicated gallery of server-processed players • Uses AppLayout.• Renders ProcessedPlayers 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.• Route: /processed-players.

${\tt PreviousBetsPage.jsx}$

Bet history & active wagers center

• Uses AppLayout.• Displays ActiveBet list (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

• Uses AppLayout.• Thin wrapper that mounts Notifications; future iterations will hydrate from user-specific subscriptions.• Route: /alerts.

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 re	sponsibilities / notable details
App.css	Global styling + mobile-first overrides	card styles.• A max-width 76 tables horizontally scrollable	for #root, logo hover effects, and the default Vite 8 px media query force-stacks flex layouts, makes e, converts modals to full-screen, and ensures every izing—turning the desktop SPA into a fluid mobile
App.jsx	Top-level React router	legacy redirect by pointing /	DashboardPage,
firebase.js	Front-end Firebase initializer	•	Vite env variables and calls initializeApp().• b and, in browser environments only, R or Node tests don't break.
index.css	Tailwind layer injection	Simply imports @tailwind custom styles live in individu	base, components, and utilities; actual ual component .css files.
main.jsx	React entry point rendered by Vite		oot().render(<strictmode><app n index.css so Tailwind styles apply globally nts.</app </strictmode>

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 Recommendation 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 Firestore docs via getProcessedPlayers() and displays responsive card grid.• Live filters: team dropdown, Al-recommendation dropdown, free-text search.• Each card opens PlayerAnalysisModal or emits onAddToPicks.• Maintains addedPlayers map to flash a for 3 s after a pick is queued.
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	 Lets users drop multiple screenshots, previews them, and tracks upload % with a fake progress bar. Calls /api/parse_screenshot → receives { parsedPlayers[] } → sequentially POSTs each to /api/player while painting per-row status chips (spinner / ✓ / X). Auto-clears previews when done; shows animated success & error toasts.
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 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 player info, logos, threshold, Al recommendation and Poisson + Monte-Carlo probs.• Key-stats tiles, volatility tiles, expandable tables (all-season encounters, playoffs log, recent games).• Fetches extra games on demand, color-codes vs-threshold, and exposes onAddToPicks.
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	• Handles player name + threshold inputs, keeps a recent searches dropdown in localStorage, shows helpful tips pane, and forwards calls via onSearch.• While back-end is working, displays ChatGptThinking loader.
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 *.
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	• Renders persistent header with logo, earnings banner, warning banner, and nav links.• Highlights active route via NavLink and routes: Dashboard, Processed Players, Previous Bets, Alerts.• Loads user profile (earnings, name) from Firestore on mount and provides context to children.• Handles sign-out / auth guard, redirecting unauthenticated users to /.
MobileLayout.jsx	Responsive shell that swaps between a desktop sidebar and a collapsible mobile drawer	• Navigation buttons now call navigate() (React Router) instead of toggling manual state; current route is highlighted.• Sticky mobile header with hamburger/close icon toggles sidebarOpen state.• Desktop: fixed 64-px-wide sidebar listing Dashboard, Processed Players, Previous Bets, Alerts.• Mobile: full-height overlay that closes on outside click.• 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	Displays photo (with fallback), name, team, position, team / opponent playoff ranks, and

for small screens

position, team / opponent playoff ranks, and next-game info.• Fully responsive flex layout

that stacks on narrow widths.

ActiveBet.js	X
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Expandable card summarizing an in-progress wager

• Lists each active bet; click header toggles expanded view via expandedBets state.• Top bar shows Active Bet title, pulsing alert icon, and Edit / Cancel buttons (prop-driven).• Expanded: two-column grid with bet metadata (amount, platform, status) and pick list; each pick clickable for deeper info.• Color-codes pick status (Final = green, Live = yellow).

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	• 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.• Uses serverTimestamp() so created/last-login times are server-authoritative.	
migrateData.js	Script to reorganize legacy user docs into the new schema	• 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	Key responsibilities / notable elements	

glance

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)	 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. 	
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/

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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" \rightarrow "Firstname Lastname," and strips line-breaks from the *Reason* column. • Exposes two helpers: • get_full_injury_report() \rightarrow list \subset {gameDate, gameTime, team, player, status, reason} for every entry. • get_player_status(name) \rightarrow 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.