**Technical Specification: Backend Infrastructure Setup**

**1. User Authentication**

* Use Firebase Auth or Supabase for secure login/signup.
* Supports Google/Apple OAuth, email+password, anonymous guest login.
* Tokens managed securely with auto-expiry.

**User Fields to Capture:**

| **Field** | **Type** | **Purpose** |
| --- | --- | --- |
| user\_id | UUID | Primary user reference |
| email | string | Login (optional for guests) |
| password\_hash | string | Securely stored |
| auth\_provider | string | e.g. Google, Email, Apple |
| created\_at | timestamp | Account creation time |
| last\_login | timestamp | For activity tracking |
| user\_type | enum/string | Guest, Registered, Researcher |
| consent\_given | boolean | For research/data use |

**2. Database (User Data + Gift Sessions+ Gift Recommendations+ Feedback)**

* Use Firestore (NoSQL) or Supabase (PostgreSQL) with scalable structure.

**Schemas:**

* Users: stores registration and preference info

*e.g., {*

*"user\_id": "UUID",*

*"email": "string",*

*"profile": {*

*"age": 32,*

*"relationship": "sibling",*

*"gifting\_style": "thoughtful"*

*},*

*"created\_at": "timestamp"*

*}*

* GiftSessions: each session stores input, AI suggestions, and output

*e.g., {*

*"session\_id": "UUID",*

*"user\_id": "UUID",*

*"recipient\_traits": {*

*"personality": {...},*

*"love\_language": "quality\_time",*

*"occasion": "30th birthday"*

*},*

*"intent": "nostalgic",*

*"gift\_suggestions": [ { "title": ..., "search\_term": ... } ],*

*"selected\_gift": "custom star map",*

*"timestamp": "ISO-8601"*

*}*

* Gift Recommendation: stores each suggested gift with metadata and matching score

*e.g., {*

*"recommendation\_id": "UUID",*

*"session\_id": "UUID",*

*"user\_id": "UUID",*

*"title": "string",*

*"description": "string",*

*"search\_term": "string",*

*"emotion\_tag": "string",*

*"matching\_score": "float",*

*"rank": "int",*

*"timestamp": "ISO-8601"*

*}*

* Feedback: stores user ratings, satisfaction, and intent validation

*e.g., {*

*"session\_id": "UUID",*

*"user\_id": "UUID",*

*"satisfaction\_rating": 4,*

*"gift\_relevance\_score": 5,*

*"freeform\_feedback": "too many luxury items",*

*"timestamp": "ISO"*

*}*

**3. Interaction Tracking**

**Key Events to Track:**

| **Event Name** | **Properties Captured** |
| --- | --- |
| gift\_session\_started | occasion, relationship, intent, recipient age |
| quiz\_completed | number of questions, time taken |
| gift\_viewed | gift\_id, category, search\_terms, AI label |
| gift\_selected | gift\_id, emotional\_tag, comparison\_score |
| session\_rated | satisfaction score, relevance score, time to decision |
| shared\_gift\_link | platform (email, WhatsApp), recipient type |
| gift\_scored | User\_id, session\_id, recommendation\_id, score\_type, matching\_score, source, timestamp. |

**4. AI Integration Layer**

* Use OpenAI API (GPT-4) via secure backend route
* Use structured prompts to return JSON with gift suggestion fields:
  + title, description, emotion\_tag, search\_keywords
* Use search\_keywords to generate web search links:
  + Google: https://www.google.com/search?q={{query}}
  + Etsy: [https://www.etsy.com/search?q={{query}}](https://www.etsy.com/search?q=%7b%7bquery%7d%7d)

**5. Search Integration**

* User clicks button: “Search on Etsy” → opens generated search URL
* Dynamically inject query string based on AI output
* Optional: offer multi-retailer options

**6. Security & Compliance**

* TLS encryption, JWT auth, field-level privacy
* GDPR-compliant deletion mechanism
* Consent capture for analytics or research