

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}}`

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