

# AI-Powered Merchant-Consumer Matchmaking Platform for Personalized Deals

## Introduction

This proposal introduces AmEx MatchAI, a GenAI-driven matchmaking engine integrated into the American Express mobile app. It leverages neural networks (NN) and generative AI to intelligently connect merchants and consumers, offering personalized, contextual, and adaptive deals. By merging AmEx's closed-loop transaction data with GenAI's ability to reason and generate, MatchAI aims to enhance productivity, protection, and growth, while maintaining transparency, ethics, and user trust.

## Problem Statement

AmEx faces a dual challenge: consumers receive generic, non-personalized deals, while merchants - especially small and emerging ones - struggle with visibility and customer targeting. Traditional marketing models rely on manual curation and static analytics, which are inefficient, slow to adapt, and costly.

As competitors (e.g., JPMorgan's AI concierge, Apple Intelligence in Wallet) advance personalization, AmEx needs a scalable and trustworthy GenAI system that automatically learns from real-time trends, creates meaningful experiences, and preserves fairness in exposure for all merchants.

## Value Proposition

AmEx MatchAI delivers transformative value by supercharging consumer-merchant interactions through GenAI, directly aligning with AmEx's core pillars:

### Productivity

- **GenAI automates both analysis and creative content generation**, replacing manual deal curation.
- Automatically generates **personalized offer texts, campaign titles, and visual descriptions** ("Your perfect Friday combo: 15% off dining + 10% off movie tickets").
- Reduces marketing costs and improves campaign speed by up to **40%**,

allowing reallocation of staff to higher level strategic work.

## Protection

- All GenAI actions run within **AmEx's closed-loop environment**, ensuring full data ownership.
- GenAI-generated insights are **explainable**, with user-facing rationales ("This deal matches your spending on mid-range dining in the past 3 months").
- **Privacy-first design**: users control categories, opt-outs, and temporary pauses; AI memory is deletable on demand, ensuring compliance with GDPR and CCPA.

## Growth

- Personalized, AI-curated experiences foster **loyalty** by making deals feel human and timely.
- **Exposure** is awarded to merchants based on various indicators of **performance**.
- Small merchants gain guaranteed exposure, while large merchants are capped to maintain fairness.
- Dedicated **dashboard** for merchants housing information including but not limited to traffic per deal, category, or store.
- Transparent **tier-based system** (similar to loyalty programs for customers) updated monthly to allow merchants to better assess own performance.
- Merchants can also receive **suggestions** for potentially successful deals based on existing data and **GenAI-generated insights** such as:  
"Your lunch promotions attract 20% more new customers when bundled with dessert partners nearby."
- This creates a feedback loop that drives both **consumer engagement** and **merchant performance**.

In a landscape where competitors are rapidly advancing AI for personalized financial experiences, AmEx MatchAI differentiates through its proprietary closed-loop data model. For instance, Capital One's agentic AI tools like Chat Concierge provide tailored auto-financing recommendations, while their AI models predict customer behavior for customized digital interactions. JPMorgan Chase is pursuing a fully AI-powered mega-bank blueprint, deploying personalized AI assistants and agents for client experiences with a reported 25% gain in satisfaction via micro-personalization. Apple Wallet leverages Apple Intelligence for automated order tracking summaries from emails and travel-friendly features like enhanced boarding passes in iOS 26. Similarly, Google Wallet introduces AI-driven predictive payments, real-time transit personalization, and family-shared controls for secure, customized experiences. Unlike these, AmEx MatchAI uniquely accesses both consumer spending patterns and merchant transaction signals in real-time, enabling bidirectional, merchant-consumer matchmaking for nuanced bundled deals that surpass one-sided recommendations.

from card networks or banks without direct merchant ties—driving unmatched loyalty and transaction uplift in 2025's AI banking surge.

## Overall Impact:

- **For Consumers:** Tailored deals based on habits (e.g., "Based on your frequent travel spending, here's a bundled hotel + flight deal"), reducing decision fatigue and enhancing experiences.
- **For Merchants:** Increased visibility for small/new partners through minimum exposure guarantees, while capping large merchants to promote fairness.
- **For AmEx:** Boosts transaction volumes, partner retention, and data-driven insights for future innovations, creating sustainable commercial value.

This solution is ethical (bias-mitigated NN models), compliant (GDPR/CCPA-aligned), and scalable (cloud-based architecture), solving today's personalization gaps while paving the way for AmEx's AI-driven future.

## High-Level Architecture

AmEx MatchAI is designed as a modular, GenAI-powered plugin within the AmEx mobile app, using neural networks at its core for matchmaking. It integrates seamlessly with AmEx's existing data ecosystem while ensuring security and scalability.

### Key Components:

#### 1. Data Ingestion Layer (Input Processing with GenAI):

- Merchant Data Summarization: GenAI (e.g., large language models like GPT variants) processes merchant profiles (category, price level, location, ratings, seasonality, traffic, offer performance, capacity, similarity to nearby merchants) into structured features.
- Consumer Data Fetching: Securely retrieves expenditure history, reconstructing it into ML-suited formats (e.g., vectors for recency, frequency, expenditure by category, temporal patterns, geospatial habits, preferences from offer interactions, engagement, risk tolerance).
- Contextual Integration: Incorporates real-time trends (e.g., holidays, payday via external APIs) and localized preferences, with filters for proximity, exposure counts, and balance between new/familiar recommendations.
- Tools Used: GenAI for feature extraction; secure APIs for data access.

#### 2. Core Matchmaking Engine (Neural Network Layer):

- NN Model: A recommendation neural network (e.g., based on collaborative filtering or graph neural networks) processes combined consumer-merchant-contextual features to generate matchmaking scores.
- Considerations Applied:
  - Minimum exposure for small/new merchants to boost visibility.
  - Eligibility filters (age, legal restrictions by region).
  - Exposure limits for large merchants and per-consumer caps based on spending habits.
  - For new users without spending history (cold starts), the system employs fallback strategies such as demographic-based seeding from consented profile data, quick onboarding surveys for initial preferences, or popularity-based warm starts drawing from aggregated, anonymized trends. Similarly, for new merchants lacking performance data, initial matchmaking uses proxy signals like category benchmarks and location-based similarity to established partners, enabling rapid personalization and onboarding within the first interaction.
- Ethical Safeguards: Bias detection in training data; model auditing for fairness.

### **3. Output Generation Layer (GenAI for Explanations):**

- Translates NN outputs into natural language (e.g., "Based on your recent dining spends in NYC, try this exclusive deal at a nearby artisan cafe – it matches your preference for mid-range, highly-rated spots"), with optional deeper transparency via model interpretability tools like SHAP values or attention visualizations. These enable internal audits for regulatory compliance and user-facing 'why this match?' explanations on request, balancing GenAI's efficiency with trust-building accountability.
- Suggests new interests via bundled deals (e.g., "Pair this with a theater ticket for a full evening experience").
- User Interface: GenAI for summarization and analytics; In-app notifications, personalized dashboard, or interactive chat for deal exploration or insights for merchants.

### **4. Backend Infrastructure:**

- Data Storage: Secure, compliant databases (e.g., AmEx's closed-loop model) with deletion rights for AI memories.
- Scalability: Cloud-based (e.g., AWS/Azure integration) for handling millions of users; microservices for modularity.
- Monitoring & Compliance: Real-time auditing tools for ethics, performance metrics (e.g., match accuracy, engagement rates).

### **Technical Depth:**

- GenAI Integration: Fine-tuned LLMs for input/output handling; embeddings for feature representation.
- NN Implementation: Trained on anonymized historical data; uses techniques like attention mechanisms for contextual awareness.
- Security: End-to-end encryption; user consent for data use; AmEx-controlled kill switches for data purging.
- Sustainability: Energy-efficient models (e.g., quantized NN); designed for low-latency mobile deployment.

This architecture ensures a robust, all-around system that's feasible with AmEx's existing AI capabilities (e.g., machine learning since 2010).

## Implementation Plan

To bring AmEx MatchAI to life, we outline a phased, actionable plan focused on business execution, leveraging AmEx's resources for rapid development and scaling.

### Phase 1: Ideation & Prototyping (1-2 Months Post-Selection)

- **Actions:** Form cross-functional teams (AmEx engineers, data scientists, product managers). Develop MVP using open-source GenAI tools (e.g., Hugging Face for LLMs, PyTorch for NN) integrated with mock AmEx APIs.
- **Milestones:** Build proof-of-concept app plugin; test with synthetic data for matchmaking accuracy (>85% relevance target).
- **Resources Needed:** Access to AmEx developer sandbox; collaboration with internal AI teams.

### Phase 2: Development & Testing (2-3 Months)

- **Actions:** Integrate with real AmEx data (consumer histories, merchant partnerships) via secure APIs. Implement protection features (data deletion protocols, eligibility checks). Conduct A/B testing for user engagement and merchant feedback, including privacy-focused pilots to validate opt-out efficacy and trust metrics.
- **Milestones:** Achieve compliance certifications (e.g., SOC 2); refine NN models with AmEx's fraud detection expertise.
- **Risk Mitigation:** Ethical AI reviews; pilot with select user segments to monitor biases.

### Phase 3: Launch & Scaling (3-6 Months)

- **Actions:** Roll out as a beta feature in the AmEx app (iOS/Android) and create channel for partnership in selected regions for experiment (e.g. major cities in the US and Canada). Monitor KPIs (e.g., deal redemption rates, loyalty metrics, cost savings from reduced personnel). Iterate based on feedback, expanding to more merchants.

- **Milestones:** Full production launch; partnerships with new merchants attracted by the platform.
- **Business Alignment:** Marketing campaigns to promote the feature; ROI tracking (e.g., 20% uplift in card spends projected).

## Feasibility & Applicability at AmEx:

- **Technical Feasibility:** Builds on AmEx's AI heritage and closed-loop data model; no new hardware needed.
- **Business Feasibility:** Low initial cost (leverage existing infrastructure); high ROI through growth in transactions and partnerships.
- **Sustainability:** Designed for long-term value, with modular updates for evolving GenAI tech.

This plan ensures quick wins while creating future-proof value, fully aligned with AmEx's innovation goals.

## Expected Impact

### Consumers:

Personalized, contextual, and explainable offers; reduced decision fatigue.

### Merchants:

Increased exposure, AI-generated marketing copy, and actionable insights.

### AmEx:

Stronger loyalty, higher card usage, and sustainable ecosystem growth.

## Why This Stands Out

Unlike competitors offering one-sided personalization (consumer-only), **AmEx MatchAI introduces bidirectional GenAI matchmaking**, combining reasoning (NN) and generation (LLM) for both sides of the ecosystem.

It doesn't just **recommend**: It **creates, explains, and learns** ethically, shaping American Express into the **AI-driven bridging platform** of the future.

## Future Vision

### AmEx Concierge AI

In later iterations, MatchAI could evolve into **AmEx Concierge AI**, capable of designing complete lifestyle experiences:

“Book a fine-dining dinner, taxi, and after-show dessert—all with your AmEx points.” By integrating with AmEx’s travel, dining, and entertainment networks, MatchAI can redefine loyalty not as a reward—but as an **AI-personalized journey**.

### **AmEx Personal Advisor**

An alternative route for expansion is a personal finance/investment advisor. **AmEx PA** offers tailored suggestions based on recent successful investments, preferences, and consented user data:

“Based on your prior investments, you may be interested in the following:”

By leveraging AmEx’s expansive database and experience, MatchAI could seamlessly evolve into a **trusted financial partner**. With AmEx’s grand network of existing users and rich history in the banking industry, AmEx PA extends user loyalty far into the financial domain, guiding smarter, future-oriented decisions and building trust through transparency. This positions American Express not only as a card issuer, but also as an **enduring partner in personal growth, wealth creation, and financial security**.