**MasterCard and Visa: AI in Payment Services**

* **MasterCard**
  + Uses AI to predict and prevent payment scams.
  + Developed an AI-powered ‘Consumer Fraud Risk’ solution.
  + Solution uses large-scale payments data to identify scams in real time.
  + Follows the flow of funds through mule accounts used by criminals.
  + Provides banks with intelligence to intervene and stop a payment before funds are lost.
  + Uses deep learning algorithms for fraud detection, anomaly detection, and data analysis.
  + Uses generative AI to create synthetic fraud transaction data and spot red flags in large datasets.
* **Visa**
  + Uses AI in its Visa Advanced Authorization (VAA) system.
  + VAA monitors and evaluates transaction authorizations on VisaNet in real time.
  + Helps financial institutions identify and respond to emerging fraud patterns and trends.
  + Analyzes 100% of the transactions processed on VisaNet in about one millisecond.
  + Allows financial institutions to approve legitimate purchases and prevent fraudulent transactions.
  + Sees generative AI as a transformative force in commerce and payments.
* **Challenges**
  + Rise in cybersecurity threats, expanding payments ecosystem, and greater regulatory requirements.
  + Fraudsters have shifted focus to impersonation tactics.
  + Authorized push payment fraud (APP fraud) accounts for 40% of U.K. bank fraud losses.
  + APP fraud could cost $4.6 billion in the U.S. and U.K. alone by 2026.

**Enza Global Orchestration Services and AI Applications**

* **Merchant Management**
  + Onboards new merchants using video KYC and AML integration.
  + AI Applications: Generative AI for personalized offers, Computer Vision for biometric authentication.
* **Payment Processing**
  + Processes various types of payments.
  + AI Applications: Time Series Forecasting for optimizing transaction routing.
* **Risk Management**
  + Offers secure transactions and fraud prevention with Express Pay and Trident.
  + AI Applications: Anomaly Detection for identifying suspicious transactions, Supervised and Unsupervised Classification and Regression for risk level classification.
* **Global Services**
  + Supports 90 currencies and offers multi-currency processing.
  + AI Applications: Graph Networks for building and managing payment ecosystems.
* **Switch/ Connectivity**
  + Owns VAP and MIP for Visa and Mastercard networks.
  + AI Applications: RLHF for automating and optimizing payment orchestration.
* **Value Added Services**
  + Provides in-built 3DSS and MPI, offers features like vault, tokenization, one-click user experience, same day settlements, instant refunds, and payment links.
  + AI Applications: Generative AI for personalized offers, Computer Vision for biometric authentication.
* **Recon, Reporting & Settlement**
  + Performs N-way reconciliation and handles staging, settlement, dispute, chargeback, and reports.
  + AI Applications: Clustering for customer segmentation, Supervised and Unsupervised Classification and Regression for predicting customer churn and retention.

**AI in Payment Processing**

* PayPal:
  + Uses AI for fraud detection and customer service.
* Mastercard:
  + Employs AI for transaction processing, network optimization, and personalized services.
* Stripe:
  + Applies AI for task automation and risk management.
* Square:
  + Utilizes AI for contactless payments and value-added services.

**Challenges in AI Implementation**

* Bias in AI algorithms:
  + Can lead to unfair treatment or inaccurate predictions.
* Privacy and security concerns:
  + Vulnerabilities due to AI’s data-intensive nature.
* Lack of standardization:
  + Incompatibility between AI systems can result in inefficiencies.
* Ethical concerns:
  + AI decisions can impact people’s financial lives.

**Addressing Bias in AI Algorithms**

* Use diverse and representative datasets.
* Apply techniques like fairness-aware learning, adversarial debiasing, and counterfactual reasoning.
* Regularly test and validate the AI algorithms.
* Provide transparency and explainability for the AI algorithms.
* Engage in ethical conversations with stakeholders about potential bias sources and impacts.
* Invest in diversifying the AI talent and teams.