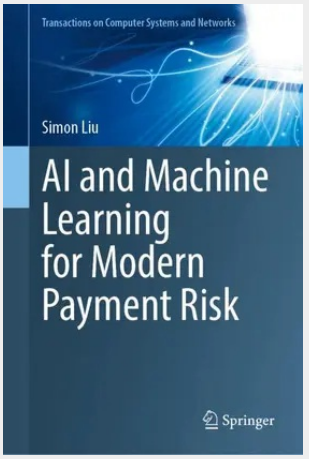
Liu

AI and Machine Learning for Modern Payment Risk



This book offers a practitioner-oriented treatment of how artificial intelligence and machine learning are applied to prevent, detect, and manage risk across modern digital payment systems. It treats payment risk not as a narrow fraud-detection problem, but as an end-to-end decision-making system embedded within complex e-commerce and fintech platforms, covering the full payment lifecycle: pre-authorisation screening, real-time transaction decisioning, post-authorisation monitoring, dispute and chargeback management, and long-term model governance. Unlike traditional machine learning texts or fraud-focused guides, the book is grounded in the operational realities of large-scale payment platforms. It addresses challenges specific to payment risk, including adversarial behaviour, delayed and noisy labels, feedback loops, real-time latency constraints, and the economic trade-offs between fraud loss, customer friction, and revenue growth. Original frameworks anchor the analysis, among them a Total Cost of Risk calculus, a strict separation of prediction, decision, and intervention, and the authorisation clock, whose tiered latency budgets shape every engineering choice. Combining conceptual clarity with applied insight, the book explains not only which models are used, but why certain approaches succeed or fail in production. Data considerations, model design, decision thresholds, monitoring, governance, and regulatory constraints are integrated into a cohesive systems-level framework, supported by structured decision diagrams, comparative tables of modelling approaches, and a lifecycle-based chapter organisation. The main benefit to the reader is a clear, realistic understanding of how AI and machine learning are actually used to manage payment risk at scale. Readers will gain both technical intuition and strategic perspective, enabling them to design, evaluate, and govern payment risk systems that are effective, explainable, and sustainable in real-world environments.

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