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## Personalization at Scale: AI-Driven User Experience Optimization

Vedant Deshpande

Data Scientist at Meta Platforms, San Francisco, USA

### Abstract

#### Background

As digital products and platforms mature, personalization has shifted from a competitive advantage to a baseline expectation. This talk explores how organizations can deliver meaningful, scalable personalization by integrating machine learning, experimentation, and data science into core product and customer experience workflows. Drawing from real-world industry applications, the presentation focuses on practical approaches to understanding user intent, modeling customer behavior, and dynamically optimizing experiences across complex user journeys.

The session will cover how AI-driven systems—such as recommendation models, propensity scoring, and next-best-action frameworks—can be operationalized to personalize interfaces, content, and decision flows at scale. A strong emphasis will be placed on experimentation and causal measurement, highlighting how robust A/B testing, incremental lift measurement, and adaptive experimentation frameworks are critical to validating personalization strategies and avoiding common pitfalls such as overfitting or spurious correlations.

In addition, the talk will discuss the organizational and technical challenges of scaling personalization, including data fragmentation, real-time decisioning constraints, and trade-offs between model complexity and interpretability. By bridging machine learning, AI systems, and applied data science, this presentation aims to provide attendees with a pragmatic blueprint for building personalization engines that are not only intelligent, but measurable, reliable, and aligned with real business outcomes.