

Harnessing the Power of Large Language Models (LLMs) in Probability- Based Survey Panels: Opportunities, Challenges, and Navigation Strategies

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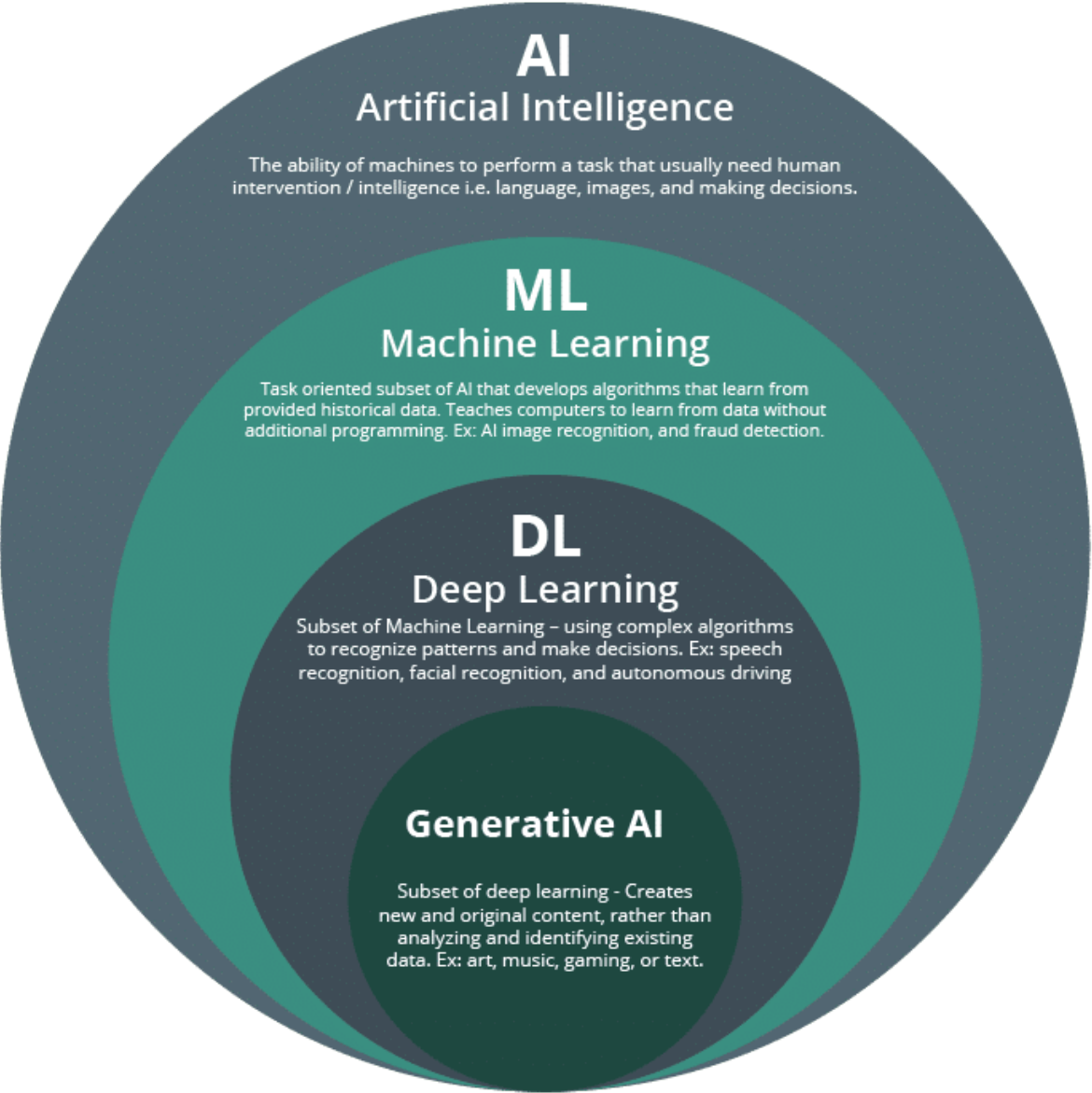
Generative AI is Here –
Are You Using It Daily?

Layers of AI

Gen-AI within the AI Ecosystem

Generative AI is a type of artificial intelligence that creates new content - like text, images, or code - by learning patterns from large datasets.

Unlike traditional AI, which follows fixed rules to classify or predict, **Generative AI produces original responses based on probabilities.**



Where Generative AI Makes Most Sense for Survey Research

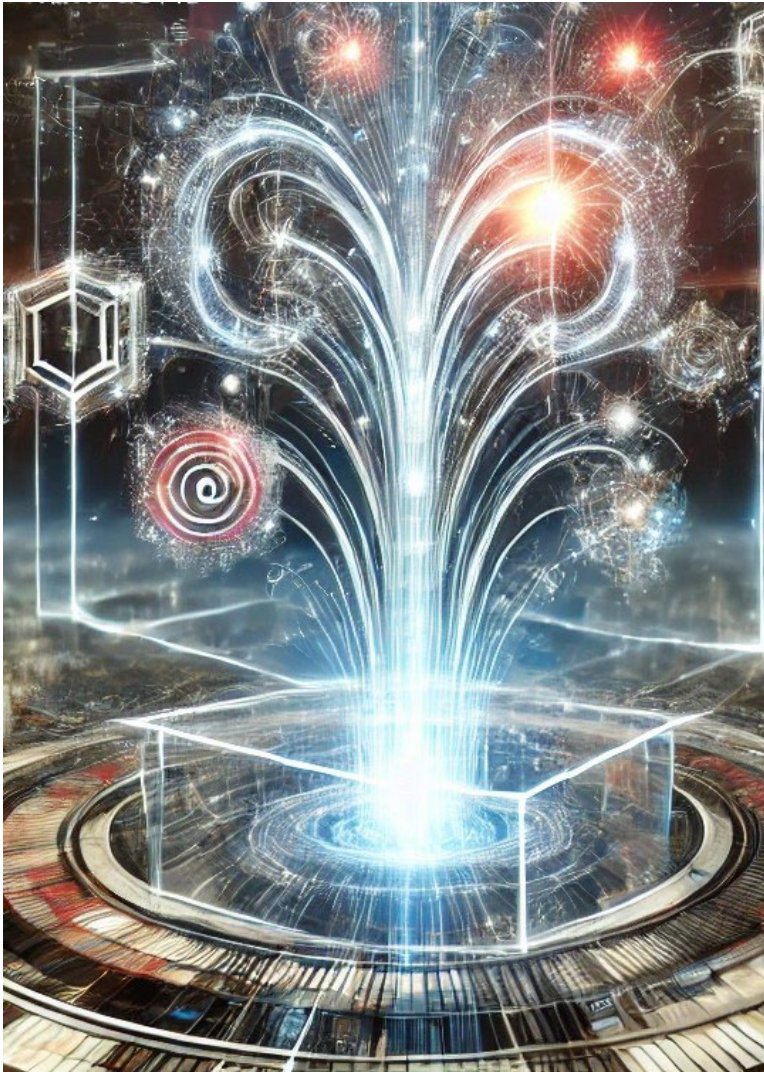
- **Do we need replicability in the task?**
 - Deterministic:
 - $A + B = C$ (always produces the same outcome)
 - Probabilistic:
 - $A + B \rightarrow C1, C2, C3, \dots$ (multiple possible outputs)
- **Human experts & generative AI are probabilistic:**
 - Human recall is not a fixed system – responses vary based on context, experience & memory
 - Generative AI, which operates probabilistically, mirrors human-like variability in responses
- **Where Generative AI is Most Useful (Today)**
 - Text based applications: writing, summation, translations, questionnaire designs
 - Tasks where variability is acceptable and efficiency matters

Where Generative AI Can Improve Surveys Now?

- ✓ Question Development
- ✓ Real-time Translation



AI-Assisted Questionnaire Design



- **Problem to solve:**
 - ✓ Many surveys suffer from poorly written questions
 - ✓ Time consuming task
- **Why Generative AI?**
 - ✓ Well-developed set of rules for good question design
 - ✓ Vast number of high quality, publicly available questions exist
- **Benefits to Panels:**
 - ✓ Panels generate thousands of questions yearly – AI reduces development time
 - ✓ Provides unique starting point for development of questionnaire
 - ✓ Especially good for new areas where standard questions don't exist

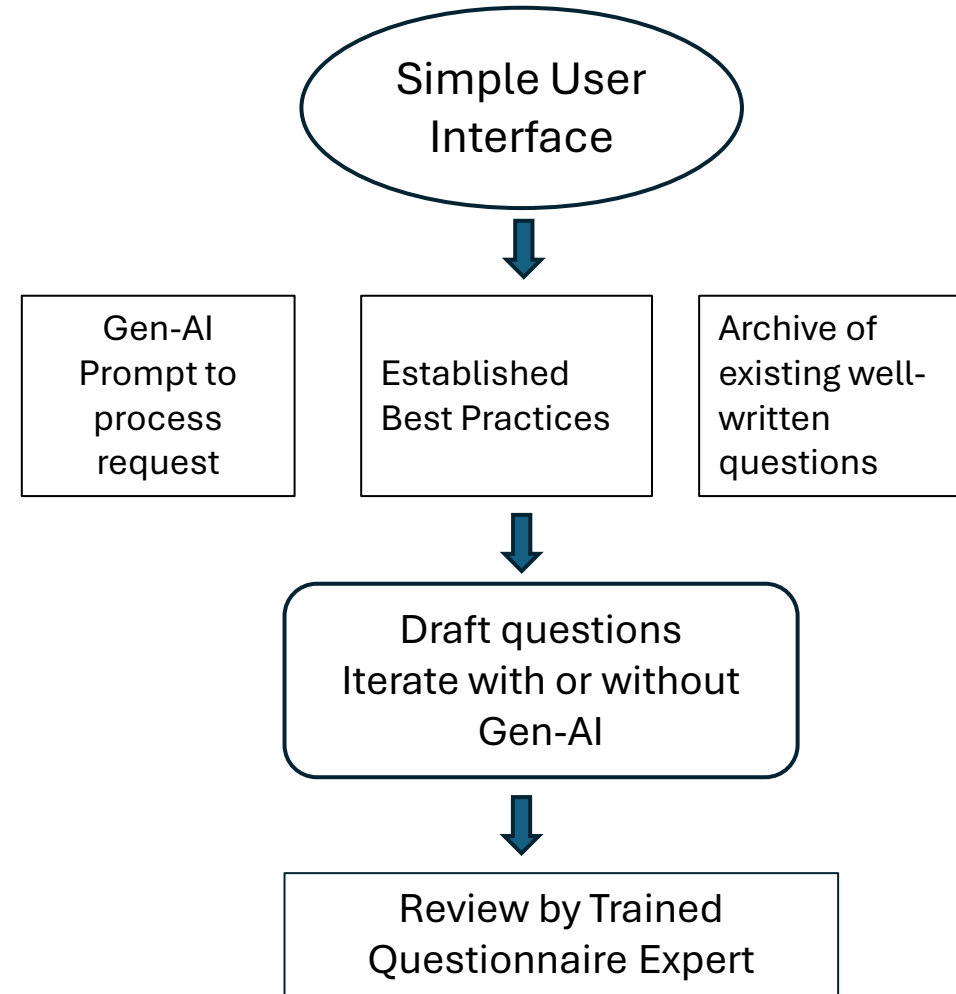
How Gen-AI Supports Questionnaire Design

- **Basic Concept:**

- ✓ Program AI with the set of known question development best practices
- ✓ Point to a body of pre-screened, high quality questions
- ✓ Develop a simple interface to initiate a behind the scenes prompt
- ✓ Have a trained expert do final review – **AI assists, but expert review is essential**

- **Additional benefits:**

- ✓ User feedback can improve the tool over time
- ✓ Build in bias detection
- ✓ Provide readability scores



Expanding Survey Reach with AI-Powered Translation

- **Problem to solve:**

- ✓ Translations are time consuming and expensive
- ✓ Surveys translations in US are often limited to Spanish
 - ~20% of US adults struggle with English comprehension
 - ~5-8% do not speak English or Spanish well, if at all
- ✓ Current methods exclude these groups, creating 100% non-response bias
- ✓ Many survey firms lack trained translators, leading to quality issues

- **Why Generative AI?**

- ✓ **Pre-Programmed Translation (Traditional Approach)**
 - AI generates an initial translation.
 - A human expert reviews, refines, and validates before deployment.
- ✓ **Dynamic, Real-Time Translation**
 - Respondents choose their preferred language at the survey start
 - AI translates questions and responses instantly
 - Expands language accessibility but may introduce minor inconsistencies
 - Reduces 100% non-response bias to smaller measurement bias.

- **Benefits to Panels:**

- ✓ Expands reach and inclusivity
- ✓ Adapts dynamically, if panelist switches languages, ensuring smooth multilingual engagement
- ✓ Enhances cross-country and multilingual surveys, improving data consistency
- ✓ Reduces translation costs and accelerates survey deployment



What I Hope You Share with Others ...

- Generative AI significantly improves survey efficiency.
 - ✓ Accelerates development of high-quality survey questions and translations, enhancing productivity.
- AI-powered translation makes surveys more inclusive and representative.
 - ✓ Reduces language barriers, reaching broader, multilingual audiences, improving data quality and representation.
- Effective AI integration requires expert human oversight.
 - ✓ AI enhances survey processes, but human expertise is crucial for ensuring accuracy, consistency, & ethical standards.

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