



Search Ads/AI

Vidhya Review

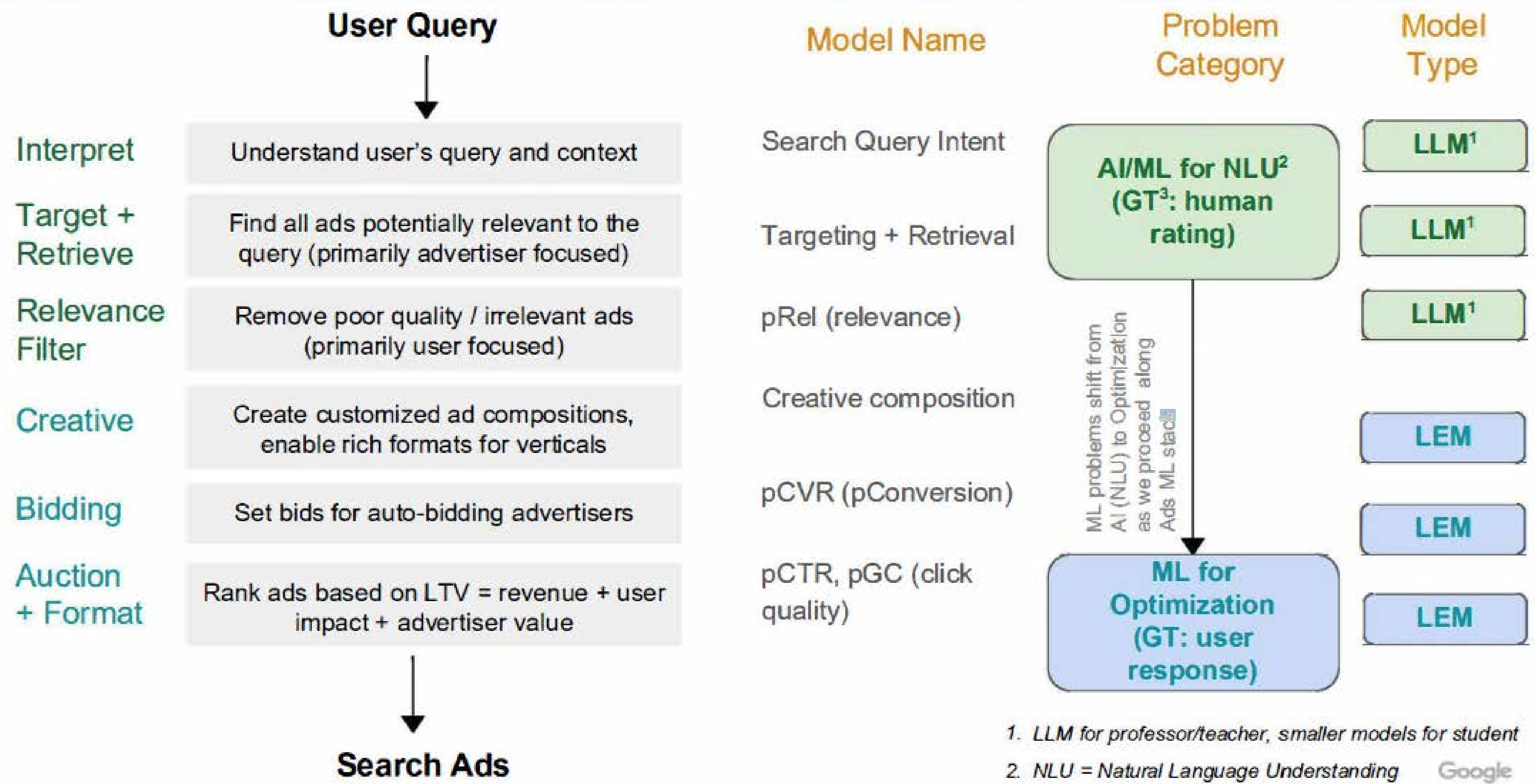
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Ex. No.
PXR0246
1:20-cv-03010-APM
1:20-cv-03715-APM

GOOG-DOJ-34345155

Simplified Ads ML stack: LLM mainly impacts early part, LEM dominates late part



1. LLM for professor/teacher, smaller models for student
2. NLU = Natural Language Understanding Google
3. GT = Ground Truth



LEMs drive **85-90%** incremental LT-RPM of Ads. They are critical for Ads and Google.

Engagement Predictions

User Actions

- Text / image ads click-throughs
- Video view-throughs
- App clicks / downloads

Automatic Bidding

- Advertiser-reported conversions
- conversion values
- In-app / in-store purchases

User Experience

- Goodclick: whether users will stay on a landing page; modify auction weight based on GC
- Relevance of {query, ad} pairs

Resource Efficiency

- Retrieve likely auction winners
- Filter queries without ads
- Save resources on low revenue queries

Spam Detection

- Catch anomalous click and conversion patterns
- Detect out-of-distribution clicks and click durations

Signal Generation

- Privacy-safe user behavior embeddings
- X-MEN: Co-trained query and creative embeddings

System Improvements Google