

Cascaded Bid Floors for Heavy-Tailed Mobile Ad Auctions

A Deployed Production System

Rowan Swiers Yash Jain Ajinkya Jawale Andrew Maher

Metica

AdKDD 2026 Workshop

Business context and contributions

Context. Free-to-play mobile games earn much of their revenue from in-app ads, sold impression-by-impression through mediation auctions. Metica sets bid floors on behalf of game publishers.

Goal. Maximise publisher ad revenue by choosing the right bid floor for every impression.

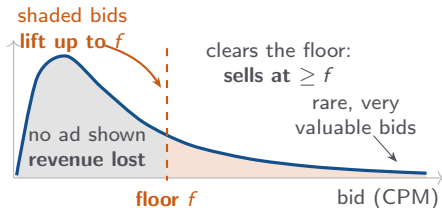
Contributions.

1. We formulate publisher-side bid-floor optimization for heavy-tailed, first-price mobile ad auctions with retry paths.
2. FLOORGYM: an open-source simulator calibrated on production data. Single floors underperform; high/low cascades win.
3. Production evidence: **+13.2%** ARPDAU in an A/B test across 44 games (~ 5 M daily users).

The publisher's bid-floor problem

Mobile games sell each ad impression in a **first-price auction**. The publisher's lever is the **bid floor**, a minimum acceptable price.

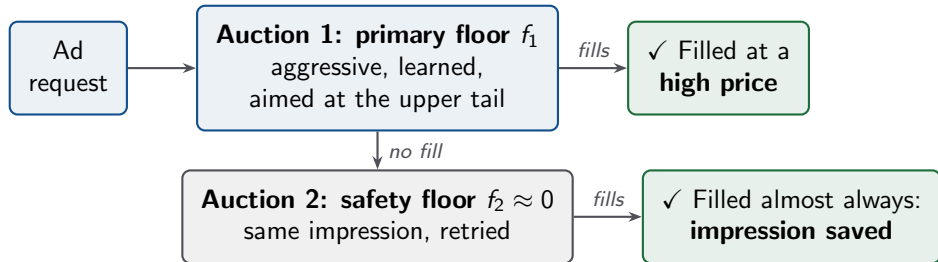
- Bidders **shade**: they bid below true value. . .
- . . . so a floor can force them to **lift their bid up to it**. *That* is where the price gain comes from.
- Bids are **heavy-tailed**: most cheap, a few very valuable.
- Feedback is **partial**: winning bids and no-bid events only.



One floor is a hard balance: too high loses impressions, too low gives up the price gain.

Our idea: a cascaded (high/low) bid floor

Instead of one floor, give each impression **two chances**:



Two jobs, separated: the primary floor **extracts price**, the safety floor **protects fill**. One floor can't do both; a cascade can.

FloorGym: a publisher-side simulator

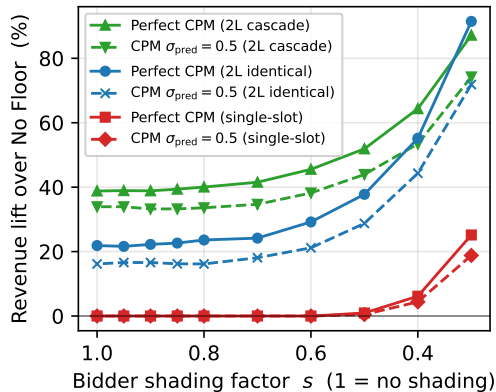
We built **FloorGym**, an open-source simulator calibrated on **real production data**, to understand how the system works.

- Parametric **first-price bidders** with shading and heavy-tailed valuations.
- Some **randomness** in bidder participation and valuations when an auction is repeated.
- Head-to-head comparison of policies: **single floor** vs. **repeated floor** vs. **high/low cascade**.
- Oracle baselines bound how much any predictor could ever earn.
- Lets us vary shading, tail weight, and prediction error: conditions we cannot control in production.

github.com/meticalabs/floor-gym

In simulation: the cascade wins

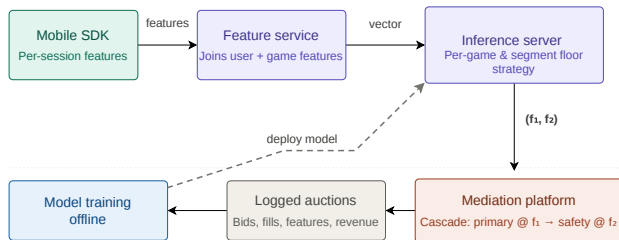
- Single floor barely beats “no floor”: fill loss cancels price gains.
- Retrying the *same* floor twice does better: failed impressions get a second chance to fill.
- The **high/low cascade** wins at realistic shading levels: it captures upper-tail value *and* keeps fill.



Further right = heavier shading. Green: high/low cascade; blue: same floor twice; red: single floor

From simulator to production

- Lightweight **SDK** in each game sends request-time signals.
- Servers enrich with user / game / market features.
- Model returns the **primary floor**; near-zero safety floor backs it.



Production results: 44 games, ~5M DAU

Seven-day within-game A/B test, Game District portfolio (80/20 treatment/holdout).

Format	ARPDau	95% CI	CPM	Imp/DAU
Portfolio	+13.2%	[+10.5, +15.2]	+9.3%	+3.7%
Interstitial	+10.5%	[+8.3, +12.3]	+8.0%	+2.5%
Rewarded	+20.5%	[+14.3, +25.2]	+13.0%	+6.9%

- **+13.2%** ARPDau vs. each game's incumbent floor strategy.
- Higher prices **and** more impressions: CPM up +9.3% while impressions per user *also* rose +3.7%: price gains without sacrificing fill.

Takeaways

1. **A single floor is hard to balance** under heavy-tailed first-price auctions: too high loses impressions, too low gives up revenue.
2. **A high/low cascade fixes this** by separating price extraction from fill protection.
3. **It holds up in the real world:** **+13.2%** ARPDau across 44 live games, validated by simulation *and* a 5M-DAU production A/B test.

Future work: parallel auction calls, discrete preconfigured floors, latency cutoffs, and adaptive bidder shading.

Thank you

Cascaded Bid Floors for Heavy-Tailed Mobile Ad Auctions

Rowan Swiers, Yash Jain, Ajinkya Jawale, Andrew Maher (Metica)

`rowan@metica.com` | `github.com/meticalabs/floor-gym`