Descending Price Optimally Coordinates Search

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Overview

Challenge: market design with **information acquisition costs**

1. Background
2. *Descending Price Optimally Coordinates Search*. Kleinberg, Waggoner, Weyl EC 2016.
3. Recent related work

Background: optimal search

Weitzman 1979: *Pandora's Box Problem*

Each alternative $i = 1, \ldots, n$ has:

- known value distribution $\mathcal{D}_i$
- known cost of inspection: c_i
- when/if cost is paid, value v_i drawn

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maximize $\Big($ *value* $\quad - \quad$ *sum of costs* $\Big)$

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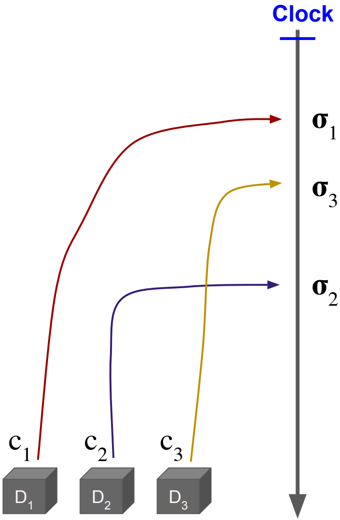
models a set of bidders

cost of entry, information acquisition, etc.

Background continued

Optimal algorithm:

- Compute **indices** $\sigma_i(\mathcal{D}_i, c_i)$
- Cllock descends from $+\infty$
- When it hits σ_i: inspect, paying c_i and learning v_i
- When it hits v_i: stop and choose i



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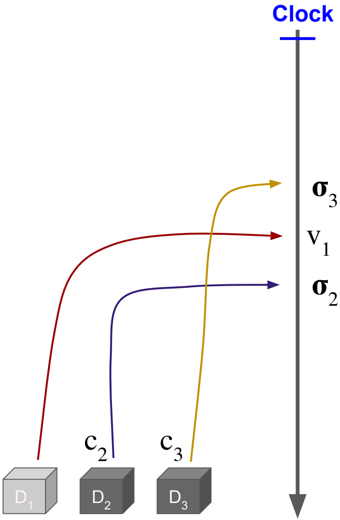

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- inspection is mandatory before obtaining item

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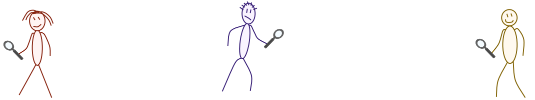
$\implies$ inspection is **not coordinated**

Intuition: benefit of the Dutch

- Allow bidders to wait while price descends
- If item is claimed early: no wasted inspection cost
- If item is available late: inspection has high returns



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- Claim item when price reaches $b_i(v_i)$.
- **Equivalence of (optimal) welfare!**

Results continued

Implications:

- Welfare $\geq \left(1 - \frac{1}{e}\right)$ First-Best
- Symmetric bidders $\implies$ fully efficient
- Revenue implications...

Extensions, ideas

Channel Auctions. Azevedo, Pennock, Weyl.

The Marshallian Match. Waggoner, Weyl (forthcoming).

- Two-sided market
- Each side places bids on possible matches
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Thanks!