

Agent-Designed Contracts: How to Sell Hidden Actions

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0. Abstract

- Problem description:
  1. A *service provider* sells a service to a *user* and provides a menu of payment options.
    - For example, a menu of payment options could be based on the quality of the service.
  2. *User* chooses a payment option contingent on the *user's* observed final outcome.
  3. The *service provider* performs an action that is hidden from the *user*, the user only observes a final outcome.
- **Goal** - enable the computation of contracts that guarantee that the *user* can trust the *service provider*, even if the *service provider's* actions are hidden.
- *Users* are characterized by  $n$  types, as in the Bayesian problem.
- Results:
  - Show that no polynomial algorithm can approximate the optimal menu.
  - Problem can be solved if the service provider is constrained to a constant sized menu.
    - Reduce the problem to a multi-item pricing problem with unit-demand and price floors.
  - Extend the problem:
    1. Continuous action space.
    2. Menus of randomized payments.