PyMarket - A simple library for simulating markets in Python

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Summary

PyMarket is a python library designed to ease the simulation and comparison of different market mechanisms.

Marketplaces can be proposed to solve a diverse array of problems. They are used to sell ads online, bandwith spectrum, energy, etc. PyMarket provides a simple environment to try, simulate and compare different market mechanisms, a task that is inherent to the process of establishing a new market.

As an example, Local Energy Markets (LEMs) have been proposed to syncronize energy consumption with surplus of renewable generation. Several mechanisms have been proposed for such a market: from double sided auctions to peer to peer trading.

This library aims to provide a simple interface for such process, making results reproducible. In doing so, it exposes a `Market` interface that accepts bids, runs market mechanisms algorithms to clear the market, produces statistics about the results and plots the results. An intuitive procedure is provided to implement new mechanisms and compare them with the existing ones.

Algorithms implemented in this library have been used by the authors (Horta et al. 2017, Kiedanski et al. (2019)) as well as other researchers in the field (Mengelkamp et al. 2017). Moreover, the library is a key enabler of ongoing research in the LEMs.

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References

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