Energy saving agent

How do residents move from energy saving intentions to energy-saving behavior?
The choice processof residents when moving from energy-saving intentions to energy-saving behavior is a steady state formed by the long-term comprehensive effect of individual internal psychological factors and external environmental factors. Energy-saving intentions and behavior are poorly matched in the absence of an appropriate external policy.

What is the behavior intention of energy saving In Snec?
The behavior intention of energy saving also increases slowlyafter the behavior changes,and the increase also is relatively significant. In the mode of SNEC,the output values of four types of energy-saving behavior of resident agents all increase. The increase of HAB is most significant,increasing from the initial 2.03 to 4.22.

How can the government improve energy-saving behavior?
Therefore, the government should enrich their guided energy-saving policies, increase the intensity of education and publicity on energy-saving behavior, create a good atmosphere of energy-saving social norms, and create better energy-saving communication platforms to strengthen the energy-saving behavioral intentions of residents.

What are the subscripts of energy-saving behavior?
The subscript Frepresents IFB. PE represents the perception of economic savings outcome from the implementation of energy-saving behavior. PS represents the perception of spiritual satisfaction outcome from the implementation of energy-saving behavior. Table 3. Descriptive statistical analysis results of moderated variables.

How does SNEC affect energy-saving behavior of resident agents?
In the mode of SNEC,the output values of four types of energy-saving behavior of resident agents all increase. The increase of HAB is most significant,increasing from the initial 2.03 to 4.22. IFB increases from 1.62 to 3.58 and QTB increases from 1.61 to 3.13. Meanwhile,EIB of resident agents increases weakly form 1.91 to 2.83.

How can residents improve energy-saving behavior?
Raising residents' awareness of their own energy consumptioncan stimulate initiatives to implement energy-saving behavior.

Multi-agent Reinforcement Learning for Energy Saving in Multi-Cell Massive MIMO arXiv - CS - Artificial Intelligence Pub Date : 2024-02-05, DOI: arxiv-2402.03204 Tianzhang Cai, Qichen Wang, Shuai Zhang, Özlem Tu?fe Demir, Cicek Cavdar

We develop a multi-agent reinforcement learning (MARL) algorithm to minimize the total energy consumption of multiple massive MIMO (multiple-input multiple-output) base stations (BSs) in a multi-cell

network while preserving the overall quality-of-service (QoS) by making decisions on the multi-level advanced sleep modes (ASMs) and antenna switching of these ...

An agent-based model is developed to estimate the potential of energy savings of an office room under different pricing mechanisms. For this aim, an energy balance model was developed to simulate the operation of air conditioner operation, the heat flux of different behavior and the electricity consumption of different types of appliances according different energy ...

Multi-agent Reinforcement Learning for Energy Saving in Multi-Cell Massive MIMO Systems Tianzhang Cai *, Qichen Wang, Shuai Zhang, Özlem Tugfe Demir? +, and Cicek Cavdar* *Department of Computer Science, KTH Royal Institute of Technology, Stockholm, Sweden ({tcai, shuai2, cavdar}@kth.se) +Department of Electrical-Electronics Engineering, ...

In this paper, the awareness of energy saving for each electricity user agent was represented by parameter M, ranging from 0 to 100. Based on the parametrized method in [4] and our survey, the electricity user agents are divided into four categories with different awareness of saving energy and the initial values for M are shown in Table 3.

In the supply chain, upstream companies can provide energy-saving products or technologies to downstream companies, which can effectively reduce the energy consumption and carbon emissions of the downstream enterprises (Kluczek, 2019).The semiconductor industry faces environmental issues such as resource consumption, waste management, and carbon ...

This article aims to establish a systematic optimization model to describe the train traffic environment and design a deep reinforcement learning (DRL) approach using multi ...

Considering the subjective initiatives of individuals in a realistic environment is the key to studying energy-saving behavior and guiding policy making. This study builds a ...

Then, a multi-agent collaborative-based energy-saving anti-jamming communication framework for UAV clusters is constructed after establishing a distributed partially observable Markov decision process. Particularly, each UAV cluster head as an agent uses the information long-term memory advantage of a long short-term memory neural network ...

The energy consumption generated by the train operation accounts for nearly 50% of the total energy consumption in the URT systems. Therefore, it has a great potential to save the energy consumption through optimizing the train operation.

Web service and ontology techniques are presented herein for supporting an energy-saving and case-based reasoning information agent. The proposed system is the first energy-saving and case-based reasoning information agent with Web service and ontology techniques in a cloud environment; the proposed

architecture is also the first multi-agent structure of an ...

The invention discloses an energy-saving agent for biomass fuel oil. The energy-saving agent comprises alkane, cyclane, total aromatic hydrocarbons, chitosan, auxiliary enzymes and yeast, wherein the auxiliary enzymes are chitosanase and yeast powder. The energy-saving agent for the biomass fuel oil can convert fuels difficult to combust into fuels easy to combust, fuel ...

In light of this, this study offers a comprehensive modelling framework for investigating the influence of interior layouts on occupants" energy-saving behaviours by integrating Agent-Based Modelling (ABM), Systems Dynamics (SD), and Building Information Modelling (BIM). The occupant behaviour within this hybrid model is built based upon the ...

This repository is associated with the publication "Multi-agent Reinforcement Learning for Energy Saving in Multi-Cell Massive MIMO Systems".This work provides a Multi-Agent Reinforcement Learning (MARL) approach to minimize the total energy consumption of multiple massive MIMO base stations (BSs) in a multi-cell network, while maintaining overall ...

From an interpretation perspective, the energy savings were attained by the agent sensing the current state and predicting the movements of the weather patterns and the server utilization based on historical data while dynamically adjusting the setpoints accordingly. Nevertheless, it neglects to educate us of the exact sources of energy savings ...

This paper presents transformative energy-saving schedule-leveraging agent (TESLA), an agent for optimizing energy usage in commercial buildings. TESLA"s key insight ...

This innovative application paper presents TESLA, an agent-based application for optimizing the energy use in commercial buildings. TESLA"s key insight is that adding flexibility to event/meeting schedules can lead to significant energy savings. TESLA provides three key contributions: (i) three online scheduling algorithms that consider flexibility of people"s preferences for ...

Tianzhang Cai, Qichen Wang, Shuai Zhang, Özlem Tugfe Demir, Cicek Cavdar: Multi-agent Reinforcement Learning for Energy Saving in Multi-Cell Massive MIMO Systems. CoRR abs/2402.03204 (2024)

This paper presents transformative energy-saving schedule-leveraging agent (TESLA), an agent for optimizing energy usage in commercial buildings. TESLA"s key insight is that adding flexibility to event/meeting schedules can lead to significant energy savings. This paper provides four key contributions: (i) online scheduling algorithms, which are at the heart ...

This paper developed an agent-based model (ABM) to explore the energy saving potentials (ESPs) of various types of appliances in offices under different pricing mechanisms. ...

The mechanism of the decrease in the surface tension of water containing bulk nanobubbles (ultrafine bubbles) is studied theoretically by numerical simulations of the adsorption of bulk nanobubbles at the liquid"s surface based on the ...

For energy saving, several studies developed a DRL algorithm for an energy-efficient multi-hop routing protocol or peer-to-peer connectivity in the ad hoc networks of satellites or UAVs [42,43], where individual mobile agents ...

Many studies have been done on the multi-energy management of industrial parks. Liu et al. [4] establish a multi-energy framework based on Stackelberg game for an industrial park and consider bi-directional energy demand conversion to achieve peak load transfer. Wei et al. [5] propose a locational marginal price for multi-energy industrial parks to enhance the economic ...

In Zhu et al. (2020), a cooperative threshold control strategy for multiple ESSs was proposed to improve the overall energy-saving effect. In Chen et al. (2023), a real-time power management strategy was designed for three consecutive traction substations via power-sharing and storage. Nevertheless, the influence of PV penetration on RB energy ...

This paper proposes an energy-saving real-time scheduling problem for a flexible job shop that considers machine selection and process switching setup time. Two energy-saving measures ...

This innovative application paper presents TESLA, an agent-based application for optimizing the energy use in commercial buildings. TESLA"s key insight is that adding flexibility to ...

Therefore, the multi-agent policy will produce intelligent trade-offs between saving energy at HVAC systems and keeping the indoor conditions within the occupants" comfort band. The main motivation behind this study is to handle the overshoot of goals that will help to energy-saving due to maintaining indoor conditions at desired thermal ...

Kwak, Jun-young, et al. [16] has conversed transformative energy-saving schedule-leveraging agent (TESLA) which may be utilized as an agent for optimizing energy usage in commercial buildings. The ...

With the development of urban rail transit, energy conservation has been highly concerned by the worldwide railway industry. The existing energy-saving control methods are hard to meet the requirements of large-scale multi-train intelligent cooperation. Furthermore, in order to optimize the overall energy consumption and make effective utilization of regenerative ...

The energy-saving policy of the agent demonstrated its profile in Fig. 13 and clearly shows its ability to achieve the goal of optimal cumulative power. The trend of energy-saving by DCCMARL policy saves more than 49.3% in energy a day when compared to conventional PID as illustrated in Fig. 13. Download: ...

Energy saving agent

Faced with environmental pollution and the energy crisis, the advancement of new energy vehicles has gained global attention [[1], [2], [3], [4]].Among them, distributed electric vehicles (DEVs), due to their significant performance advantages and huge energy-saving potential, are rapidly becoming a research hotspot in the field of new energy vehicles [5].

The invention provides an anti-wear energy-saving agent, a preparation method and application thereof, wherein the anti-wear energy-saving agent is prepared by mixing few-layer graphene, base oil, an anti-wear agent (few-layer graphene, long-chain primary alkyl zinc dithiophosphate, primary alkyl zinc dithiophosphate), an antirust agent (dimer acid and phosphate ester), an ...

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