FORM 2

THE PATENTS ACT, 1970

(39 of 1970)

&

The Patent Rules, 2003

COMPLETE SPECIFICATION

(See section 10 and rule 13)

TITLE OF THE INVENTION

"Online Auction and Fine Using ML and IoT- based System"

We, applicant(s)

NAME	NATIONALITY	ADDRESS
1. Dr. Parin Somani	British	Academic Scholar, Independent Academic Scholar, Gujarat University, Gujarat, India.
2. Dr. Shashi Kant Gupta	Indian	Researcher, Department of CSE, Integral University, Lucknow, UP, India.
3. Dr. Abdul Tayyab Khan	Indian	Assistant Professor, Department of Commerce & Business Management, Post Basaha, Kursi Road, Integral University, Lucknow, U.P.-226026.
4. Dr. Bhadrappa Haralayya	Indian	Professor and HOD, Department of MBA, Lingaraj Appa Engineering College Bidar, Karnataka, India-585403.

5. Dr. Tien Anh Tran	Vietnamese	Assistant Professor, Vietnam Maritime University, Haiphong 180000, Vietnam.
6. Prof. Dr. Dimitrios A. Karras	Greek	National and Kapodistrian, University of Athens (NKUA), Dept. General, Psachna, Evia, zip code 34400 and CIT, university, dept. software engineering, St. Xhanfize Keko, No. 12 Tirana, Albania, zip code 1000.
7. Dr. Anchal Pathak	Indian	Associate Professor, Department of Management, College of Business & Economics, Bule Hora University, Bule Hora, Ethiopia PO Box 144.
8. Dr. Ahmed Alemran	Iraq	Medicine College, Misan University, Iraq.
9. Prof. Chandra Kumar Dixit	Indian	Dean/Head, Faculty of Science & Technology, Dr. Shakuntala Misra National Rehabilitation University Mohan Road, Lucknow, Uttar Pradesh, India.
10. Dr. Sultanuddin SJ	Indian	Assistant Professor, Measi Institute of Information Technology, 87, Peters Road, Royapettah, Chennai – 600014, Tamilnadu, India.
11. Mr. Prabhdeep Singh	Indian	Assistant Professor, School of Computer Application, BBD University, Lucknow.
12. Mr. D Saravanan	Indian	Associate Professor, Department of CSE, IFET College of Engineering, Villupuram, 605108.

The following specification particularly describes the nature of the invention and the

manner in which it is performed:

FIELD OF INVENTION:

The proposed invention is related to the online auction process using a machine learning system.

Background of the invention:

5   It is common practice to rank advertisers based on a product of their bid and their click-through rate, also known as their expected cost-per-thousand-impressions (eCPM) bids, in standard Internet auctions. In these types of auctions, bidders place their bids by stating how much they are willing to pay for each click.

Although this is a reasonable method for determining which advertisement should be shown

10   in response to a specific search query, using it may not be the greatest strategy in the long run if one's goal is to display the best adverts available. When participating in online auctions, new advertisements are consistently being added to the system. Regarding these advertisements, one will typically have uncertainty about the true eCPM of the ad. This is because one will not be able to definitively determine the click-through rate of a brand-new

15   advertisement.

If this is the case, it may be desirable to display an advertisement for which one has a high degree of uncertainty regarding the true eCPM of the advertisement. This allows one to gain more information regarding the advertisement's true eCPM by observing whether or not the advertisement was clicked on.

20

Therefore, even if one feels that an ad with a high level of uncertainty is not the ideal ad for this specific inquiry, it may be beneficial to display this ad so that one may learn more about the eCPM of the ad and make more informed judgments about whether or not to show this ad in the future.

5   Although there have been previous papers on multi-armed bandits that have proposed ranking arms by a term equal to the expected value of showing an ad plus an additional term representing the value of learning about the true value of that arm, the value of learning in the problem that we consider is very different from the value of learning in standard multi-armed bandit problems. For example, in our problem, the expected value of showing an ad is equal

10   to a term that represents the value of learning about the true value of that arm.

In the case of standard multi-armed bandit problems (Auer et al., 2002), in which there is no discounting of payoffs and no random variation in the competition that an arm faces, the typical solutions involve ranking the ads according to a sum of the expected value of the arm plus a term proportional to the standard deviation in the arm's value. In other words, the sum

15   of the expected value of the arm plus the term gives the ranking.

In contrast, we show that the value of learning in our environment is related to the variation in an ad's predicted eCPM divided by the number of impressions that an ad has received. This finding supports the hypothesis that the value of learning increases with more exposure to an advertisement. Therefore, the incremental rise in the chance that a certain advertisement is

varied with $1 \leq k \leq 2$, where k is the number of impressions that this advertisement has got up to this point in time.

This is a far more modest rise than the one that would be expected from normal machine learning techniques, which would be an order of magnitude larger. In point of fact, we

5   demonstrate that the optimal value for the constant would be zero if we tried to rank the ads according to the sum of an advertiser's expected eCPM plus a term equal to a constant time the standard deviation in the advertiser's eCPM. In other words, if we ranked the ads based on this formula, the optimal constant would be zero.

Summary of the invention:

10   In this work, we investigate a model of recurrent online auctions. In this model, an advertisement with an unknown click-through rate competes against a random distribution of rival bids in each auction, and payoffs may be discounted. We show that efficiency can be maximized by making a bid for each advertiser that is equal to the advertiser's expected value for the advertising opportunity plus a term proportional to the variance in this value divided

15   by the number of impressions the advertiser has received up to this point. We do this by formulating the optimal solution to this explore/exploit problem as a dynamic programming problem. After that, we utilize this conclusion to demonstrate that the benefit of including active exploration in an auction setting is an extremely little amount of value.

"On line Auction System utilizing Machine Learning" is a model of repetitive web-based sales in which a promotion with a doubtful click-through rate confronts an arbitrary allocation of competing offers in each closeout, and settlements are capped.

An additional aim is to provide an ideal solution for this investigation/exploit issue as a unique programming issue and demonstrate that effectiveness is boosted by making a bid for every promoter equal to the sponsor's normal incentive for the publicizing an open door in addition to a term that corresponds to the fluctuation in this value partitioned by the number of impressions the sponsor has received thus far.

This conclusion may be used to demonstrate that the benefits of consolidating dynamic research in a closeout environment are negligible. Advertisement value is determined in this section, and this strategy is used to identify the best-selling approach.

An additional aim is to establish the salesperson's outcome when the barker makes a certain offer for the sponsor with a doubtful eCPM during a specified period of time.

Providing a common unique programming style in which the optimum decision at some random instant is influenced by what this choice means for future choices while looking at the unending horizon ahead is another goal of this creation.

Other goals include standardizing how these kinds of problems are dealt with. Recently, there has been working on an optional methodology commonly referred to as "information angles," in which the choice one makes in a given period is that one would take if confronted with an

endless skyline game, but this period was the last time frame in which the data one learned could be used to illustrative effect.

Model, There is a new advertisement that will participate in a second-price auction for a single advertising opportunity with other competing advertisers. The eCPM for this advertisement is unknown.

Throughout this entire discussion, we will refer to x as the actual unknown but a fixed value (or eCPM) for displaying the new advertisement, z as the eCPM bid that the auctioneer places on behalf of this advertiser, and k as the number of impressions that the advertisement has obtained up to this point.

We also suppose that the highest eCPM bid that this advertiser competes against may change from auction to auction and that in each auction, this highest competing eCPM bid is a random draw from some cumulative distribution function F() with corresponding continuous and twice differentiable density f(). In addition, we assume that the highest eCPM bid that this advertiser competes against may change from auction to auction. There is no guarantee that the auctioneer will always be aware of the precise value of x at any particular moment in time. Instead, the only thing the auctioneer is aware of is that x is selected at random from some distribution. Let us use the notation x to signify a generalized distribution that corresponds to the auctioneer's estimate of the distribution of potential values for x.

This distribution will change over time as an ad receives more impressions, and we have a better picture of the ad's underlying eCPM. This change will occur after an ad has been in circulation for a longer period of time.

The large cost of fraud committed online shows that there may be a potential benefit in accurately forecasting online auction seller deceit by making use of information that is publicly accessible. The use of machine-learning models opens the door to the possibility of very precise and automated forecasts of fraud in the online auction market.

In this research, data signals from eBay that are accessible to the public are used to evaluate the prediction power of five different non-proprietary machine-learning algorithms that are also available to the public. (Shadish et al. 2002) The design and sample were based on an approach known as case control, which is also referred to as a case-referent. Units, who are often patients in medical research, are chosen for the "case" condition in a case-control design. This selection is based on the patient's history of an uncommon but significant result, such as cancer.

The "case" sample is compared with one or more "control" samples, none of which are predicted to have the same results as the "case" sample. We use a case-control study design technique to compile our case sample, which is comprised of listings that are suspected of being misleading on eBay. After that, this sample is compared to two control samples that

were randomly picked over the same time period: (1) those that are matched to the case listing product categories, and (2) all of the listings on eBay.

Background of the invention:

Seller fraud and dishonesty are recurring concerns for eBay. This innovation makes use of data that is accessible to the general public on eBay in order to construct models that can predict the likelihood of seller dishonesty.

While the current manuscript tests machine-learning models with a specific eBay sample during a specific time period, the ultimate, pragmatic goal of this project is the conception, design, and implementation of a generalized decision aid system that is built on machine-learning algorithms, for the prediction of seller deception risk in any online, i.e., web-based market (see Pandit, Chau, et al. (2007) for an example of a nascent system with this goal). While the current manuscript tests machine, The current initiative is one step in the direction of achieving this aim.

The study that has been done so far also gives essential new insights into online auction fraud.

Journalistic, qualitative case studies of online fraud constitute an important component of the relevant research that has been done. These accounts include descriptions of fraud and deception published in the popular press (Anonymous 2001a, 2001b; Carlton and Pui-wing 2000; consumers based on archival accounts of one-time online deceptions (Hitchcock and

Page 2006; Silver Lake Editors 2006), first-person accounts of one-time deceptions written by deceived buyers (Klink and Klink 2005), and a unique first-person deception description written by a convicted fraudulent seller. All of these accounts were (Walton 2006).

The social disorganization theory has also been employed in research to understand the various roles that purchasers play in the three different online anti-crime groups in an attempt to curb Internet auction fraud.

Other embodiments of the present disclosure will also become readily apparent to those skilled in the art from the following detailed description of the embodiments concerning the accompanying figures, the intention not being limited to any particular embodiment or any particular set of embodiments disclosed in any particular case.

While the present invention is described herein by example using embodiments and illustrative drawings, those skilled in the art will recognize that the invention is not limited to the images of drawing or drawings described and are not intended to represent the various scale components. Further, some features that may form a part of the invention may not be illustrated in specific figures for ease of illustration. Such omissions do not limit the embodiments outlined in any way. It should be understood that the drawings and detailed descriptions are not intended to limit the invention to the particular form disclosed. Still, on the contrary, the story is to cover all modifications, equivalents, and alternatives falling

within the scope of the present invention as defined by the appended claims. As used throughout

In this description, the word "may" is used in a permissive sense (i.e., meaning having the potential to) rather than the mandatory reason (i.e., meaning must).

5   Further, the words "a" or "an" mean "at least one," and the word "plurality" means "one or more" unless otherwise mentioned. Furthermore, the terminology and phraseology used herein are solely for descriptive purposes and should not be construed as limiting in scope. Language such as "including," "comprising," "having," "containing," or "involving," and variations thereof, is intended to be broad and encompass the subject matter listed after that, equivalents, and additional subject matter not

10   recited, and is not intended to exclude other additives, components, integers or steps. Likewise, the term "comprising" is considered synonymous with the words "including" or "containing" for applicable legal purposes. Any discussion of documents, materials, devices, articles, and the like are included in the specification solely to provide a context for the present invention. It is not suggested or represented that any or all of these matters form part of the prior art base or were common general

15   knowledge in the field relevant to the present invention.

In this disclosure, whenever a composition or an element or a group of elements is preceded with the transitional phrase "comprising," it is understood that we also contemplate the same design, component, or group of elements with transitional words "consisting of," "consisting," "selected from the group of consisting of, "including," or "is" preceding the

20   recitation of the composition, element or group of elements and vice versa.

11

The present invention is described from various embodiments concerning the accompanying drawings, wherein reference numerals used in the accompanying drawing correspond to the like elements throughout the description. However, this invention may be embodied in many different forms and should not be construed as limited to the embodiment set forth herein.

5   Instead, the image is provided so that this disclosure will be thorough and complete and fully convey the invention's scope to those skilled in the art. The following detailed description provides numeric values and ranges for various implementations described. These values and ranges are treated as examples only and are not intended to limit the claims' scope. Also, several materials are identified as suitable for various facets of the implementations. These

10   materials are to be treated as exemplary and are not intended to limit the invention's scope.

A more particular description will be rendered by referencing specific embodiments illustrated in the appended drawings to clarify various aspects of some example embodiments of the present invention. It is appreciated that these drawings depict only illustrated embodiments of the story and are therefore not considered limiting its scope. The invention

15   will be described and explained with additional specificity and detail through the accompanying drawings.

So that the advantages of the present invention will be readily understood, a detailed description of the story is discussed below in conjunction with the appended drawings, which should not be considered to limit the scope of the invention to the accompanying drawings.

Further, another user interface can also be used with the relevant modification to provide the results above with the same modules, its principal, and protocols for the present invention.

It is to be understood that the above description is intended to be illustrative and not restrictive. For example, the above-discussed embodiments may be used in combination. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description.

The benefits and advantages which the present invention may provide have been described above about specific embodiments. These benefits and advantages and any elements or limitations that may cause them to occur or become more pronounced are not construed as critical, required, or essential features of any or all of the embodiments.

While the present invention has been described concerning particular embodiments, it should be understood that the images are illustrative and that the invention's scope is not limited to these embodiments. Many modifications, additions, and improvements to the embodiments above are possible. It is contemplated that these variations, changes, additions, and improvements fall within the invention's scope.

We Claim:

1. The present exposure has a connection, for the most part, with the streamlining and selling off of advertisements. Certain models, methodologies, frameworks, and computer programs for promotion closeout advancement utilizing AI calculations to estimate the probability that a shopper will buy an advertised product and balance long-term and short-term objectives to decide displayed information for a watchword in a bartering are depicted in certain models. These AI calculations estimate the probability that a shopper will buy an advertised product. We take into consideration a model of repeated internet-based sales in which there is a restriction of settlements and advertising with a questionable active visitor clicking proportion encounters an arbitrary dispersion of competing offers in each bartering. After that, we make use of this result to demonstrate that the advantages of combining dynamic research in a commercial setting are negligible.

2. According to claim1#, the invention is an "Online Auction System Using Machine Learning," which is considered a model of rehashed web-based sales in which a promotion with a questionable click-through rate faces an arbitrary appropriation of contending offers in each closeout, and there is limiting of settlements.

3. According to claims 1 and 2, the purpose of the invention is to provide an ideal answer to the investigate/exploit problem as a unique programming problem and show that effectiveness is improved by making a bid for each advertiser that is

equivalent to the advertiser's typical incentive for the advertising opportunity, in addition to a term that corresponds to the variation in this worth partitioned by the number of impressions the advertiser has received up until this point.

4. According to claims 1, 2, and 3, the invention consists of using this result to demonstrate that the value of consolidating dynamic research in a closeout environment is negligible.

Dated this 29th day of June 2022

Signature:

Applicant(s)

Dr. Parin Somani et. al.

ABSTRACT

Online Auction and Fine Using ML and IoT- based System

As a result of Our Ingenuity, If a promotion has a low click-through rate, "Online Auction System utilizing Machine Learning" is used to model web-based sales in which the

5   arbitrary allocation of competing offers in each closeout and the limitation of settlements are considered. We come up with a unique programming solution to the investigate/exploit problem and demonstrate that effectiveness is increased by making a bid for each promoter equal to the sponsor's normal incentive for publicizing an open door in addition to a term corresponding to the fluctuation in this value divided by the number of impressions the

10   sponsor has received thus far. Afterward, we use this finding to demonstrate that the advantages of combining dynamic research in a closeout climate are negligible. An advertisement's value is determined in this section, and this strategy is used to identify the best technique for selling it. A salesperson's performance is first assessed for a certain time frame during which the barker submits a specific bid for the sponsor with a dubious

15   electronic CPM. To get to this stage in the article, we've been thinking about a basic unique programming method in which the optimum decision at some random instant is influenced to some degree by what this choice means for future choices while surveying the unending skyline in front. However, there has been recent work on an elective methodology known as "information angles," in which the choice one makes in a given period is the choice one

would make if confronted with an infinite skyline game, but this period was the last time

frame in which the data one learned could be utilized to illuminate future activities.

Dated this 29th day of June 2022

Signature:

5

Applicant(s)

Dr. Parin Somani et. al.