Application of Machine Learning Methods To The Cricket Predictions

Marrapu Aswini Kumar[1]   **Mrs Kavitha Chekuri**[2]   **Imandi Gayathri**[3]

Nalanagula Harini[4] **V Santosh Kumar**[5]

[1]**Assistant professor Department of Computer Science Engineering, Centurion University of Technology and Management, Vizianagaram-AP**

[2]**Assistant professor Raghu Engineering College (A) kavitha.chekuri@raghuenggcollege.in**

[3]**Assistant professor Satya Institute of Technology and Management - [SITAM], Vizianagaram**

[4]**Asst.Professor Vignan's Institute of Engineering for Women**

[5]**JNTU-GV, CEV(A) Vizianagaram**

ABSTRACT

Cricket is now a well-known team sport played all over the world and is regarded as the sport with the second highest popularity overall. There is a huge need for cricket analysis of data due to the abundance of available data and the advancement of Machine Learning (also known as ML) technology. This work is done using the machine learning algorithms which are better for the cricket predictions and gives the accurate results. A comparison analysis has been done between the algorithms and it will show the graph of each algorithm for better visualization and better understanding. Two models are used to predict the linear regression and logistic regression.

Key Words: Machine Learning, Prediction, Data Analysis.

INTRODUCTION

The cricket dataset may be analyzed to produce a wide range of intriguing results and useful predictions. The performance and tendencies of teams throughout multiple seasons and match formats are one of the main topics of interest. Cricket fans may learn more about which teams dominate in different formats by looking towards the squads that win, their overall margins of the uprising, and the sorts of encounters in which they perform best. This information might help in making predictions about which teams may do better in specific competitions or against particular opponents. Player effect is another fascinating element. We can determine the essential players who made their team successful by recognizing the player who performed in the match across multiple competitions. This data may be used to forecast players who might stand out in upcoming games and evaluate players' consistency and form. This information may be used by cricket enthusiasts and team management to choose players wisely and create an impressive lineup that increases their chances of winning. Insightful information may also be gained from the dataset's specifics on throw choices and results. The relevance of the toss in affecting match outcomes may be understood by examining how teams' decisions impact their performance in various settings and circumstances. Based on the outcome of the coin toss, this study may assist teams develop effective strategies and modify their performance. The home field advantage may also be better understood by looking at patterns in match locations and host cities. Finding out whether some teams have a tendency to do particularly well in particular settings may aid in forecasting results of upcoming games held there. It could also show how the team's performance is affected by the local environment and audience support. For cricket fans, team management, and analysts, the analysis of the cricket dataset may produce a plethora of information and useful forecasts. This information opens up a wide range of possibilities for investigation, from evaluating team performance including player influence to identifying the significance of toss choices and home-field advantage. Participants in the cricketing industry may

11143

improve their decision-making, acquire an edge over their peers, and deepen their awareness of the fascinating game of cricket by utilizing this information. Examining games that were decided by the thinnest of margins or that were close to the end might offer important insights into the most important periods and significant events that impacted the result. This study can assist pinpoint team-level instances of perseverance and pressure management as well as specific individuals who perform well under duress. Additionally, it can help anticipate the chances of tight games in upcoming matches, giving spectators a greater sense of excitement and anticipation. Analysis can investigate how cricket strategy and playing styles have changed over time by looking at historical data on various match formats. It is possible to identify shifts in team chemistry and the effects of new recruits on the game by tracking patterns in match outcomes and victory margins over the course of several seasons. When anticipating future games and comprehending the value of team performance and player contributions, this historical perspective may be quite helpful. The influence of rule modifications and innovations on game outcomes may also be explored by cricket lovers and academics, providing insight into the evolution and development of the sport.

LITERATURE SURVEY

Cricket is a widely popular sport that has a rich tapestry of intense games, team competition, and individual brilliance [1]. Cricket has brought together various cultures and nationalities in the name of sportsmanship because of its enthralling combination of strategy, talent, and emotion. Cricket continues to captivate fans throughout the world, promoting an environment of fraternity and excitement. It features thrilling matches on lush fields and great moments immortalized in history [2,3]. Cricket, despite the boisterous cheers and heart-pounding moments, continues to stand as a testament to pride and solidarity, honoring the genuine spirit of the game's ability to cross boundaries and bring people together. The annual spectacles known as cricket seasons serve as a stage for teams to demonstrate their brilliance and for fans to become fully immersed in the passion of the game. With clubs competing for dominance, players fighting for splendor and fans jubilantly roaring across stadiums and screens both, each season develops like a compelling tale [4,5]. Cricket seasons capture the spirit that represents the sport's everlasting charm and leave an imprint on the emotions of millions of cricket fans, fostering a perpetual feeling of eagerness and anticipation for cricket's next chapter. These moments range from the thrill of tightly contested matches towards the optimism of dominant performances. Throughout the spectator sport of cricket, umpires are essential as objective arbiters who maintain the rules and guarantee equal treatment on the pitch. Referees are tasked with making crucial judgments during the game, including ruling all run-out and lined-up appeals, judging the validity of catches, and making The LBW procedure (Leg Before Wicket) determinations [6]. Their knowledge of the regulations and precision in applying them are crucial for upholding the fairness of the competition and inspiring trust in both players and spectators. Match referees and umpires work together to enforce the regulations of conduct and promote good sportsmanship during play [7]. They serve as a living example of how crucial honesty and accuracy are to the competitiveness of cricket. Cricket tournaments between two teams are played with a competitive atmosphere that captures the spirit of real sportsmanship and teamwork. Beyond the competitive aspect of the sport, cricket promotes fair play and mutual respect among players and teams. Competitors from both sides show mutual respect for each other's abilities during difficult matches on the pitch and applaud and shake hands with performers who go above and beyond [8,9,10]. Cricket emphasizes the value of keeping the game's spirit and values integrity over simple winning despite the intense competition. Cricket is a testimony to the principles of sportsmanship because players compete fiercely, perpetually putting their maximal foot forward, but they also show humility in both victory and failure [11,12,13,14]. Beyond the athletes, the sporting spirit includes the spectators and backers likewise. It fosters a feeling of community and common enthusiasm for the game when cricket fans from all teams

11144

Eur. Chem. Bull. 2023,12(10), 11143-11152

join together to enjoy the hobby and its players [15,16,17]. The delight of watching spectacular cricketing moments is frequently shared by fans, even during high-stakes games and intense rivalry situations. Instilling kindness, respect for one another, and a feeling of community among athletes and viewers worldwide, the spirit of competition regarding teams in cricket serves as an effective illustration of the positive qualities that sports can impart [18,19,20]. The winning runs and winning wickets are two important factors that determine how a cricket match will turn out. The amount of runs scored during a team's batting innings determines the winning side when using a limited-overs event such One-Day Internationals (ODIs) or the Twenty20 tournament (T20) [21,22,23]. "Winner runs," which reflect the difference between the number of scores achieved by the winning side and the total runs achieved by the losing team, serve as a measure of the margin of victory [24,25,26,27]. While a tight game could have a smaller disparity in runs, a larger "winner runs" figure denotes a more dominant effort by the winning team. a feeling of unity among all players and supporters. However, in lengthier forms, including as cricket matches, the winning side may also guarantee victory by claiming all 10 of the opposing team's wickets in that team's second innings. "Winner wickets," a metric used to gauge this result, refers to the total quantity of wickets held by the losing side when the victorious team secures the final wicket [28]. A greater "winner wickets" figure denotes a more convincing victory, in which the team that triumphed comprehensively bowled out the opponent and took complete control of the game. The champion scoring and the winner's wickets are essential metrics for assessing a cricket match's level of competition and the sides' combined performance. Winning wickets represent the bowling team's capacity to methodically destroy the batting lineup of the opponent, whilst winner runs emphasize the superiority of the team with the bat and the success in the chasing or defensive strategy. supporters, analysts, and management of teams may evaluate performances, improve their strategies, and forecast results in upcoming games thanks to these data, which offer insightful information about the squads' strengths and shortcomings. In the end, the story of cricket matches is greatly shaped by winning runs and winning wickets, which also adds to the sport's continuing appeal and excitement. Cricket's prestigious honor of "Player of the Match" is given to an outstanding player who significantly contributes to a match [29]. This honor is given to the person who significantly affects the outcome of the game by excelling with either the ball, the bat, or both [30,31]. The winner of the prestigious Player of the Match award is frequently the player whose great abilities, brilliant strategic judgment, and noteworthy contributions tilt the match in their team's favor. In the larger context of a team sport, the Player of the Match award acknowledges individual excellence. It recognizes the hard work and devotion of a player who has excelled above the norm to have a substantial influence on the result of the game[32,33,34]. As supporters anxiously anticipate the unveiling of the rightful winner, this acknowledgment not only enhances the competitor's conviction but also adds an air of anticipation and thrill to every game. Displaying the unique talent of each player, which enhances the physical activity as well as adds to its allure. The Player of the Match personifies the epitome of greatness and sportsmanship that characterizes the spirit of cricket, whether it is through an exhilarating performance of power-hitting, a mesmerizing spell of bowling, or a mix of great efforts. The ICC, which stands for the International Cricket Council, appoints the Match Referee for international matches and supervises national cricket boards for provincial contests[35]. They frequently have extensive understanding of the game's regulations and are seasoned administrators or former cricket players. The contest Referee meets with the captains of both teams prior to the contest to go over the regulations of the game, the field conditions, and other pertinent information [36]. They also respond to any issues brought up by each side and make sure that everyone involved is aware of the rules and regulations for the event. The match referee keeps a careful eye on the players' conduct to make sure that sportsmanship is practiced throughout the game. They are able to punish players for a range of infractions, including dissent, excessive appeals, and code of conduct violations [37,38]. The Match Referee has the authority to issue fines, suspensions, or other disciplinary measures according to the severity of the offense. The

11145

Eur. Chem. Bull. 2023,12(10), 11143-11152

Match Referee serves as a mediator and takes necessary steps to settle any on-field conflicts or controversies in a fair and unbiased way [39,40,41]. Additionally, they have the power to call off the game altogether in dire situations like inclement weather or hazardous playing conditions [42].

METHODOLOGY

A statistical method called linear regression is used to represent the connection amongst a factor that is dependent and several independent variables. In order to foresee or calculate the significance of the dependent variable, which is based on the provided independent variables, it looks like the best-fitting uninterrupted line that depicts the pattern of the data. In many disciplines, especially economics, finance, and statistics science, linear regression is a key tool because it quantifies the connection between variables and offers insightful information about trends, correlations, and prospective forecasts.
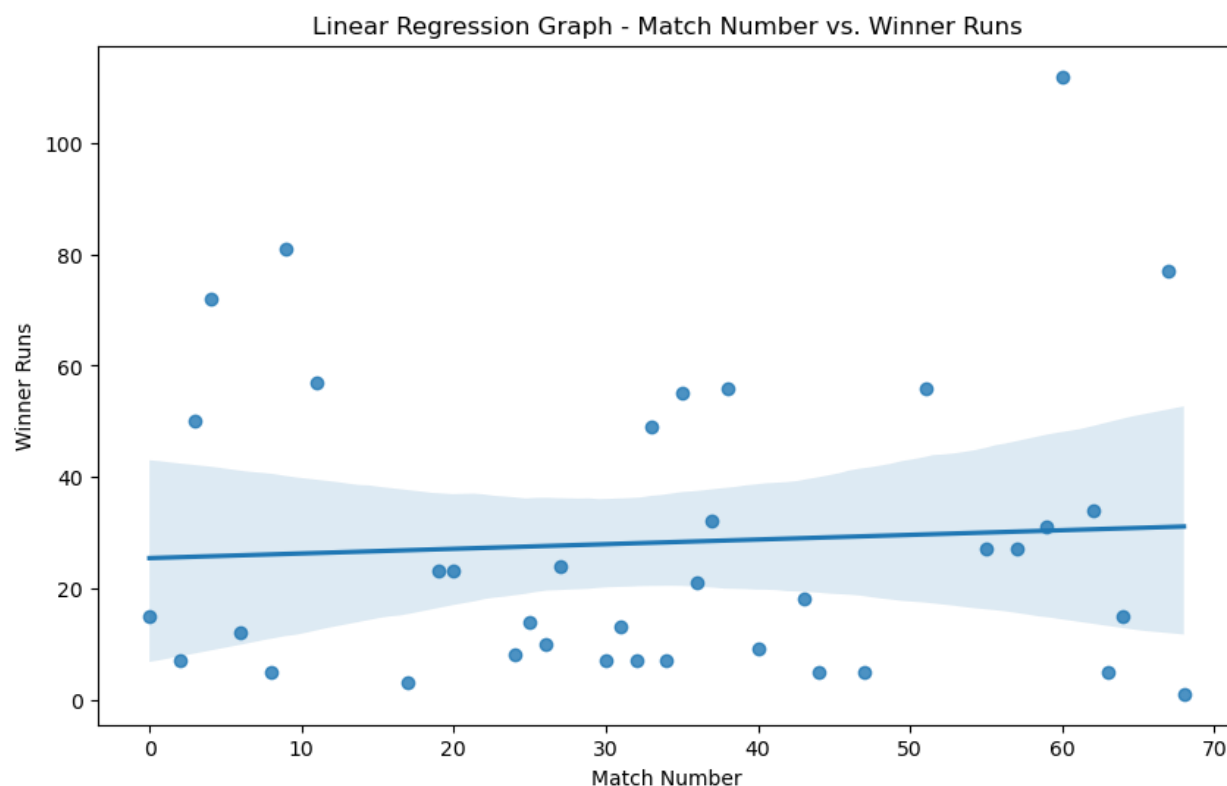
In the case of binary categorization problems, where there are only two potential outcomes for the dependent variable, logistic regression is a statistical approach that is utilized. It is especially helpful when tackling issues requiring the estimation of likelihood or the propensity for an event to occur. Logistic regression models the likelihood that a specific point of data belongs to a certain class, in contrast to the technique of linear regression, which simulates continuous dependent variables.

The logistic function, also referred to as the sigmoid function, transforms the dependent variable in logistic regression to a value that is between zero and one. Any real-valued number may be translated into this range by employing the logistic function. This output's likelihood of the data item falling into either of the two classifications is represented by the transformation.

11146
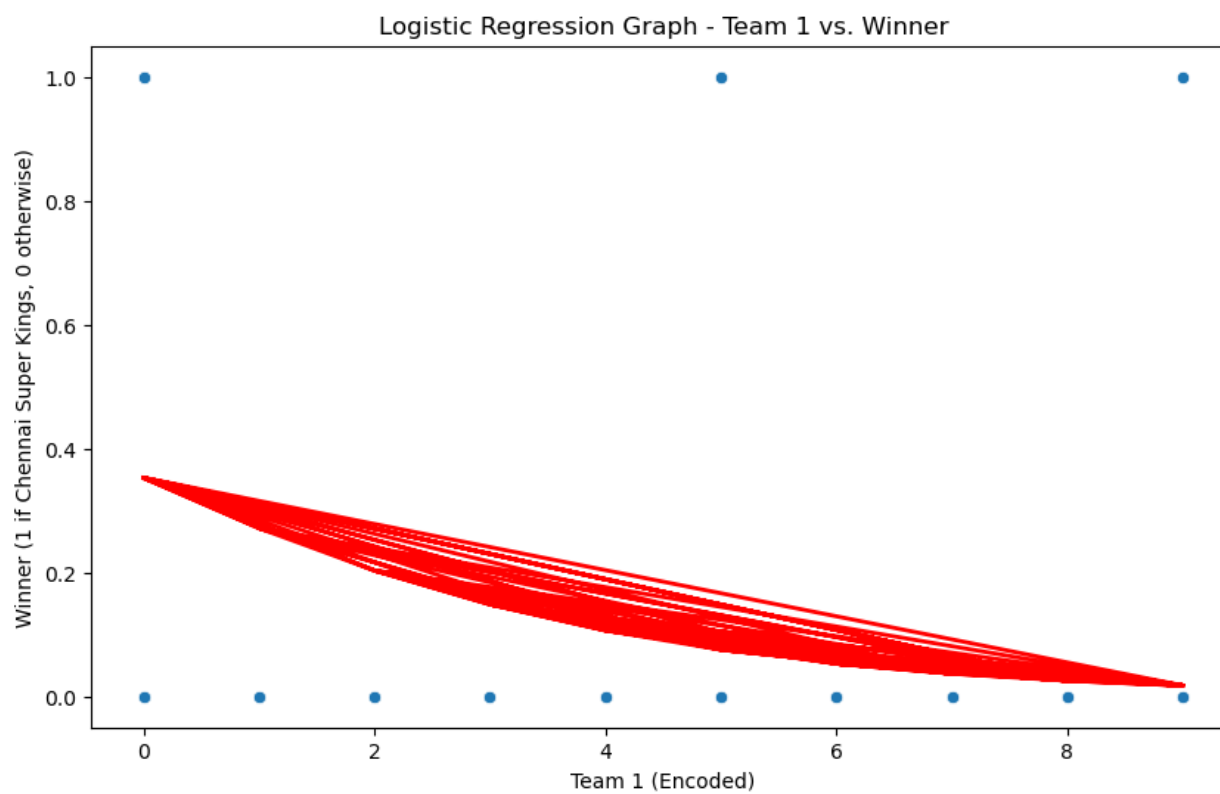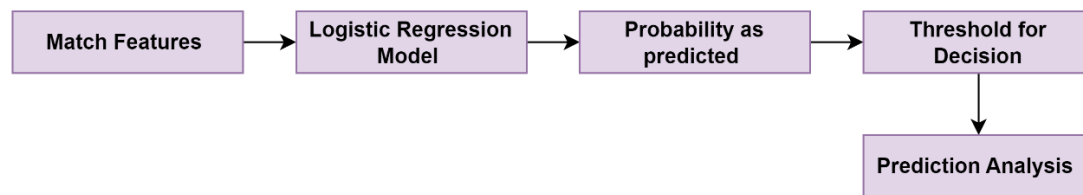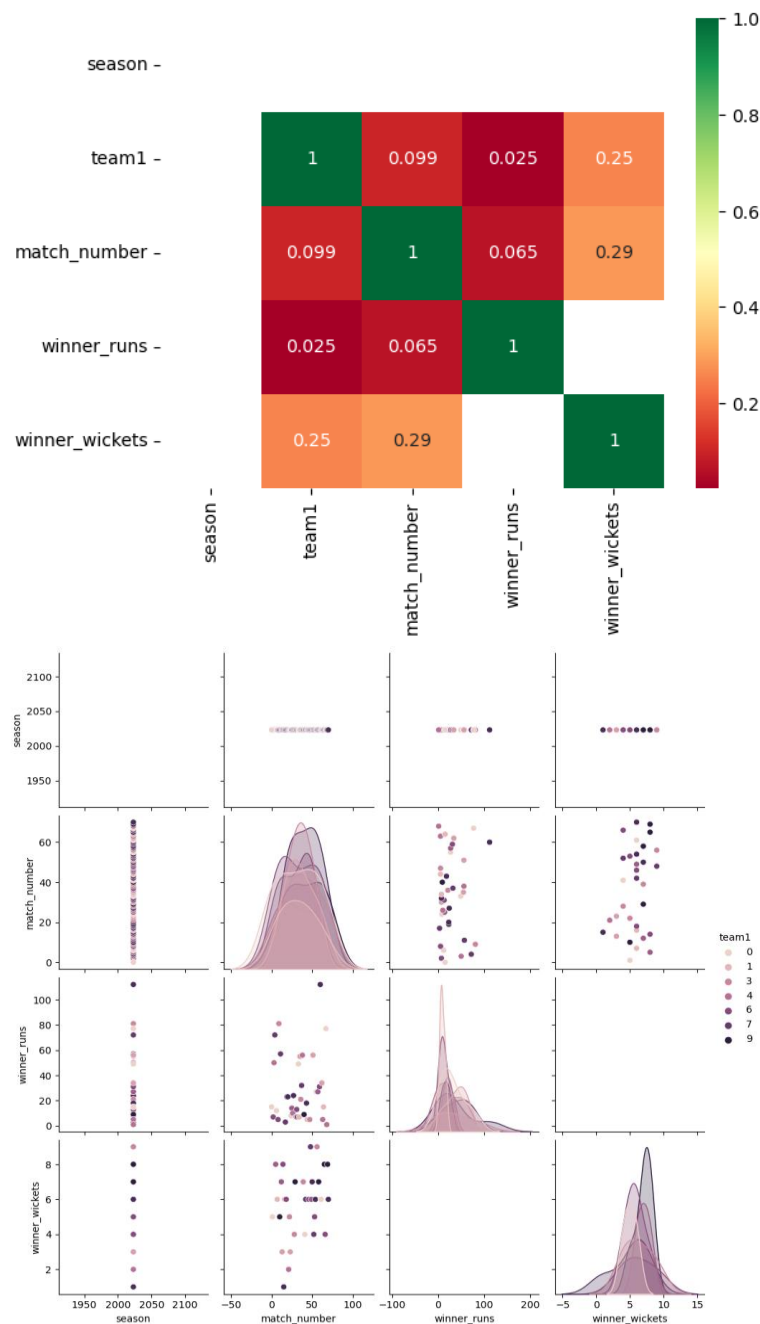
RESULTS

The below graphs and plots are all the better visualizations with the accurate ones where the data can be observed keenly between the different types of attributes.

SNO	ALGORITHM	ACCURACY
1	Linear Regression	0.92
2	Logistic Regression	0.90

11147

Eur. Chem. Bull. 2023,12(10), 11143-11152

11148

Eur. Chem. Bull. 2023,12(10), 11143-11152
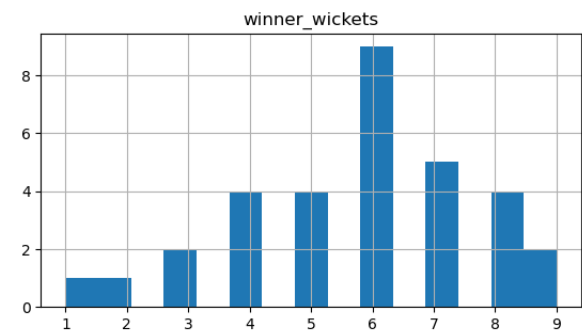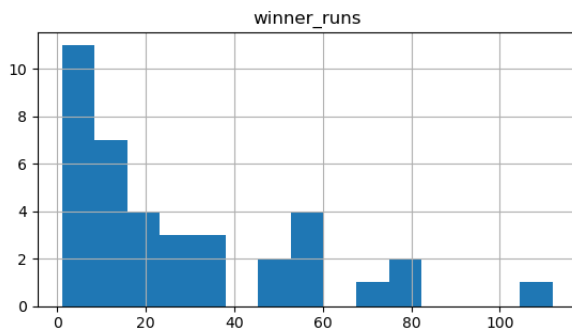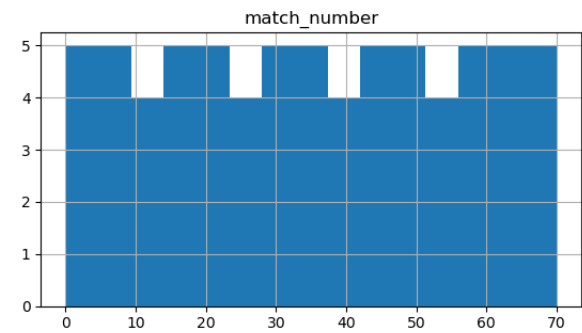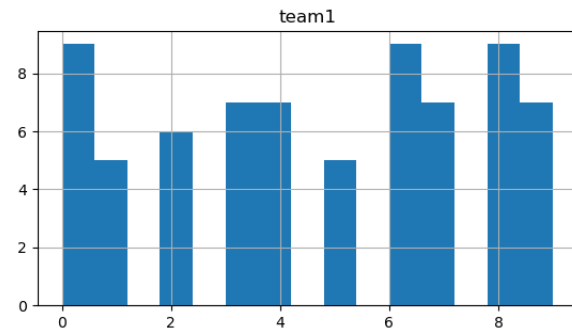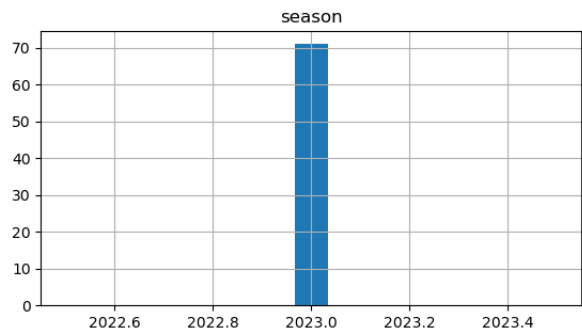
These chats show the better performance of the teams with respect to the winner teams and player of the match and seasons.

CONCLUSION

Among the applied algorithms applied logistic regression showed better accuracy compared to the linear regression. Other techniques can also be used for more effective results and better visualization of the predictions. Advanced machine learning techniques and other deep learning techniques can be used for future work.

11149

Eur. Chem. Bull. 2023,12(10), 11143-11152

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11150

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11152

Eur. Chem. Bull. 2023,12(10), 11143-11152