Comment #1.

The introduction of this research paper provides an overview of the problem statement related to laboratory accidents in university chemistry projects. The paper briefly mentions previous research efforts, such as accident data collection from websites and literature reviews, analysis of typical accidents, and the importance of safety education. However, the references provided are insufficient to support these claims and should be expanded. The proposed solution, a chemistry accident system based on data ownership safety architecture, is introduced. The process of data collection, risk variable selection, and accident model design is outlined. The concept of data ownership safety architecture is briefly described, but further clarification and examples would enhance the understanding of its application in laboratory management. Expanding on the existing research and providing more clarity regarding the proposed data ownership safety architecture would strengthen the introduction section.

Response: The authors are very thankful to the anonymous reviewers for the efforts and time to review the manuscript and their valuable and critical comments improved the present work. Your positive feedback on the revised manuscript improvement is highly appreciated by all authors. All your comments were considered carefully, and we provide here an itemized reply to each comment.

The authors have added relevant references in the revised manuscript to support authors claims. Also, relevant literature has been added to compare our study with previous studies.

The current study application has been more discussed as can be apply in data ownership safety architecture: Such as in tourism industry, government information resources sharing and application system, digital copyright works protection and trading systems. Managing chemistry laboratories has established supervision management data framework, lab experimental data trading workflow and unconditional sharing lab related data with key algorithm to make sure efficient and safety has been added in the revised manuscript accordingly. Section: 1. Introduction: Lines 26-28. (Ref: 1-4), Lines 78-84(Ref:23-27), Section: 5. Discussions: Lines 359-364. (Ref: 29-32).

Comment #2.

Materials and Methods section provides a clear explanation of the data collection process and the design of the laboratory accident system. However, more details regarding the specific methodologies employed for data collection, encryption, and

risk prediction would enhance the section's comprehensiveness.

Response: Thank you for the critical comment. Data collection: **Figure 1** has been added in the revised manuscript to explain how to use python to collect accident literature. Meanwhile, we add figure to describe whole conceptual framework (in Figure 3) in the revised manuscript which include collect non-academic website using assignment method.

Encryption: We have added more details to explain encrypt data in 2.2, furthermore we added Figure 2 to show it.

Risk prediction: We have regarded more contents in 2.3, meanwhile it is shown in Figure 3.

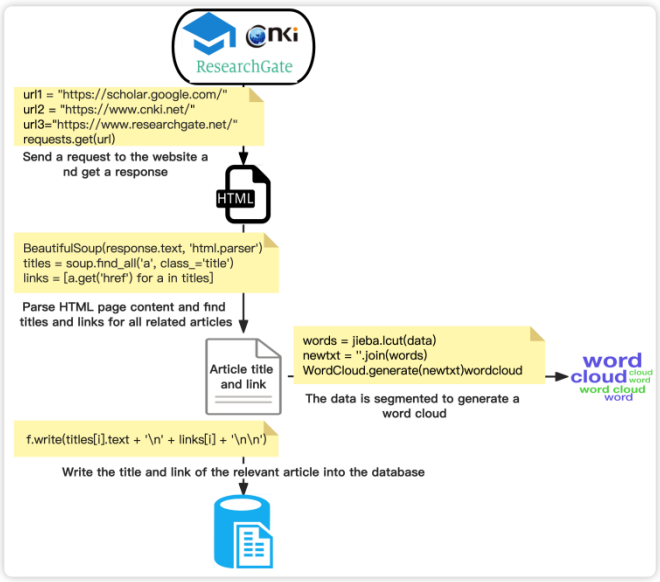


Figure 1: Reported accident data collection by Python software

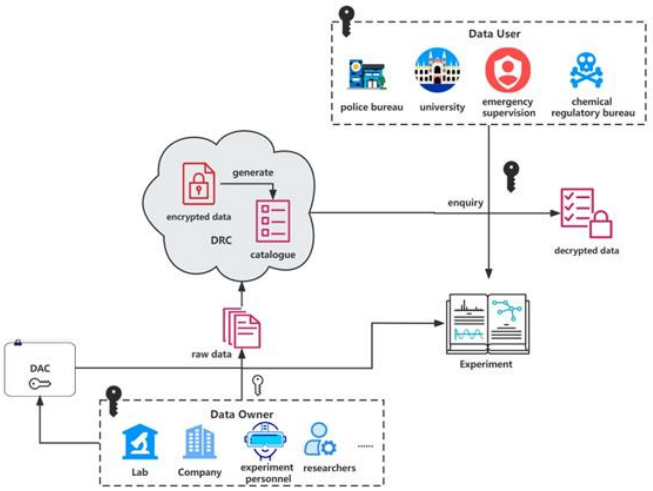


Figure 2: Conditional sharing workflow using key technologies based on DOSA

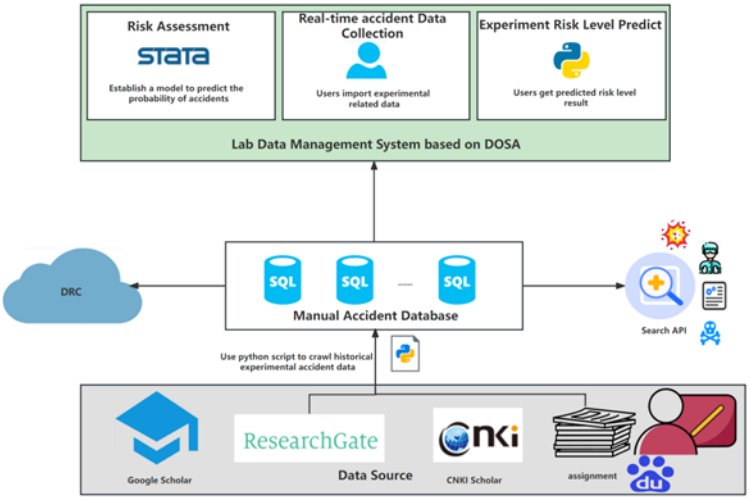


Figure 3: The workflow of manual database establishing and predicting

Section: 2. Materials and Methods: Line 94, Lines 113-122, Lines 135-148.

Comment #3.

The Results section of the research paper presents the findings obtained from the analysis of laboratory accident data and the establishment of an accident risk model. However, additional information regarding the statistical significance of the findings and the accuracy of the risk model would strengthen the section. Figures 2, 3, 4, and 6 have a fatal problem with resolution and very low readability. The authors should have edited Figure 5 back into tabular form to make it look good. This is a very simple task and the authors are a total of six. This makes it doubtful whether the authors are willing to publish this paper in prominent journals such as Electronics. Equation 1 is not organized at all and is difficult to understand.

Response: Thank you for your valuable comment. Figure 2.3 and 4.6 resolution and readability has been improved in the revised manuscript.

Figure 5 has been changed to Table 2 in the revised manuscript. For better understanding more details in Equation 1 has been added in the revised manuscript that how to establish and how to verify its credibility in Section: 3.2.

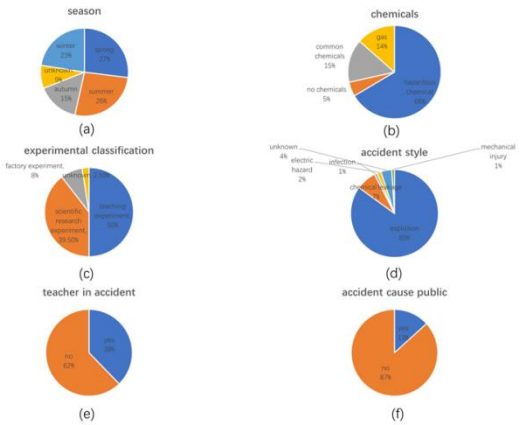


Figure 5. Analysis chemistry lab accident risk factor including season, experiment type, accident type, equipment, and chemicals. (Former Figure 2)

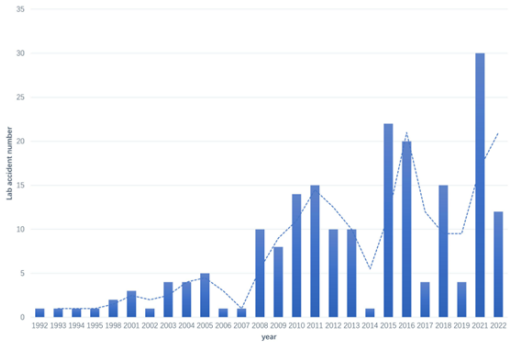


Figure 6. Chemistry laboratory accident numbers in happened year. (Former Figure 3)

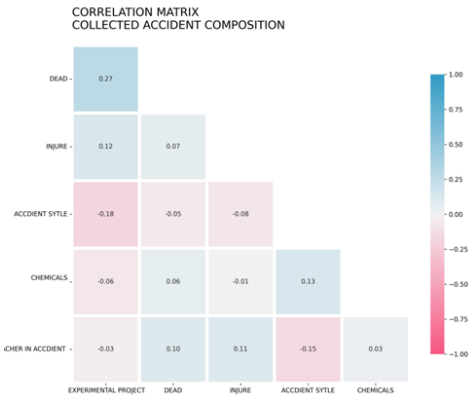


Figure 7. Chemistry laboratory accident heat map. (Former Figure 4)

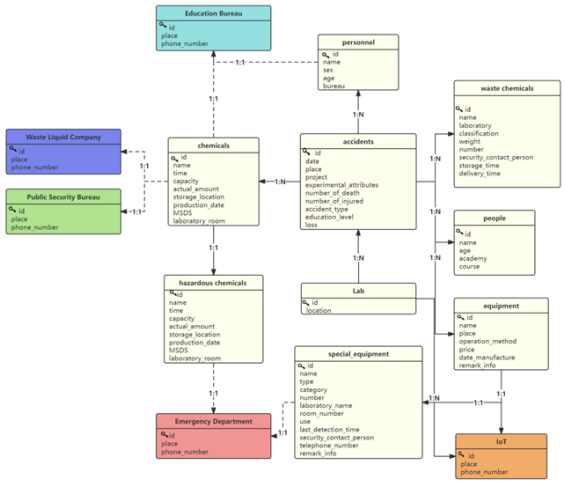


Figure 8. Structure of laboratory accident data. (Former Figure 6)

Section: 3. Results: Line 178, Line 202, Line 208, Lines 221-262, Lines 267-271, Line 295.

Comment #4.

Usage of laboratory accident system. Figures 7, 8, 9, 10 are not directly related to the core of this study.

Response: Thank you for your valuable comment. Previous Figure 7 in the revised manuscript Figure 10 represents our manual accident database predict and search using data ownership safe architecture. We can upload all lab accident-related data into our proposed system using DOSA which can break data barriers with key technology. we add risk level prediction equation in website. Any student who wants to do a new experiment, they can put related data into this website, then he can get a risk predicted result.

Previous Figure 8 in the revised manuscript Figure 11 shows how to collect historical or real-time lab accident website. as we want to collect more accident data, so we establish a system to gather related information.

Previous Figure 9 in the revised manuscript Figure 12 That, the researcher can use to study targeted safety education.

Section: 4. Usage of laboratory accident system Line 313-327, Lines 331-337, Line 347.

Comment #5.

Discussion.Is the content the authors wrote a summary of the study or a discussion? There are no comparisons and discussions with previous studies. A seven-line discussion loses much of what this study actually does. What kind of discussion took place academically?

Response: Thank you for the critical comment. The authors have added relevant comparisons with previous studies. Research gap has been added in the revised manuscript according to the valuable comments.
Section: 5. Discussion.Lines 357-364(Ref 29-32).

Comment #6.

Conclusions. What is your academic contribution? What are the practical implications? Is this study so perfect that no limitations are mentioned? Discussions and conclusions seem insincere enough to show the authors' attitudes toward academic research.

Response: Thank you for valuable comment. The comment has been added in the revised manuscript. We have added academic contribution and practical implications.
The proposed system can guarantee data owners interest, meanwhile it breaks accident-related data barriers. Our contribution is manual organize accident data using Spsspro to choose significant variable, then establish an accident level predication model. Second contribution is we designed an accident system based on data ownership safety architecture which data owner and user can conditionally share data with key algorithm. This method guarantees safety and efficiency if an emergency accident happens. Third contribution is we combined risk model into our proposed system, any experiment project wants to attend in laboratory, it can put related data to predict this project risk level. If the level is high, the research team can study suitable safety education in proposed system which can decrease the accident risk.
We also have added limitations in our research.
During September 2020 to March 2023, it is hard to get details information about accident we knew but not public. Some website information is different or unclear, we contact some universities to ensure data accuracy. Many literatures review or books, samples focus on some typical lab accident or directly put analysis result. So, we try to take assignments methods to get more information details from non-academic channel. The other limitation is risk model, we need to adjust model according to accident database increasing. The accident information is increasing, next step we can try to use machine learning method software, such as orange to obtain a dynamic lab risk model in system.
Section: 6. Conclusions: Lines 393-407.