REPORT DETAILS

Report Submission Date
16/02/2024

Reported Company/Branch Information
Location Oklahoma State University and OSU System
City/State/Zip: Stillwater, OK, 74078, USA)

Relationship to Institution
Other / Remain Anonymous

Please identify the person(s) engaged in this behavior:
Zeyuan Song - Graduate Student
Zheyu Jiang - Assistant Professor

Do you suspect or know that a supervisor or management is involved?
Yes

If yes, then who?
Prof. Zheyu Jiang

Is management or the department aware of this problem?
Do Not Know / Do Not Wish To Disclose

What is the general nature of this matter?
Scientific misconduct

Where did this incident or violation occur?
https://checlams.github.io/publications/

Please provide the specific or approximate time this incident occurred:
June 2023

How long do you think this problem has been going on?
More than a year

How did you become aware of this violation?
Accidentally found a document or file

Please identify any persons who have attempted to conceal this problem and the steps they took to conceal it:
Prof. Zheyu Jiang

We had an exchange of emails in January 2023 concerning the first article where I identified elements of scientific misconduct in using an article and a Git repository that I published in 2021. In the last email received on January 17, 2023, Prof. Zheyu Jiang said:
"I understand your concern and will communicate to the Conference organizers to submit a revised manuscript that includes the link to the GitHub repository. We will also add the in-text citations for the case study, namely the MFEM and GRW articles, which we cited several times in the paper (but apparently still missed in the case study). I will let you know as soon as the revision has been made."

Unfortunately, I have not received another email and none of these corrections were made in the revised article. Moreover, in autumn 2023 I found on Research Gate a second article published by Song and Jiang in June 2023, where again my publications were used improperly.

Details
I would like to report elements of scientific misconduct identified in two articles posted on the web site
https://checlams.github.io/publications/ :

1. A Data-Driven Random Walk Approach for Solving Water Flow Dynamics in Soil Systems
Zeyuan Song and Zheyu Jiang
School of Chemical Engineering, Oklahoma State University, Stillwater, OK 74078
Corresponding author: Z. Jiang (E-mail: zheyu.jiang@okstate.edu)

2. A Data-driven Modeling Approach for Water Flow Dynamics in Soil
Zeyuan Song and Zheyu Jiang
Oklahoma State University, 420 Engineering North, Stillwater, Oklahoma 74074 USA
Corresponding author: zheyu.jiang@okstate.edu

The authors of the articles use ideas, numerical schemes, and codes from a previously published study (https://doi.org/10.1016/j.advwatres.2021.103935 and https://zenodo.org/records/4709693)
-without giving the appropriate credit,
-falsifying the interpretation of the method they used as reference,
-fabricating false solutions to the problem,
-falsifying comparisons with the reference method, and
-finally concluding that the reference method, used to develop their own approaches, is wrong while claiming at the same time that the comparison validates their approach.

A detailed analysis of these issues may be found in the comments I done on the uploaded pdf files of the two articles.

One of my coauthors, Prof. Florin Radu from Bergen University, Norway, was aware of the situation related to the first article and we signed together two emails sent to Prof. Zheyu Jiang. However, he is not aware of the second article and he is not involved in the notification of misconduct that I am making here.

Uploaded Files

1. drw_focapo2_commented.pdf
2. songescape2023-commented.pdf

Follow-Up Notes

05/03/2024 11:41 AM
Dear Madam/Sir,

On 16/02/2024 I submitted a report on scientific misconduct concerning two articles published by employees of Oklahoma State University. On the “Questions and Comments” section of this site I read that “The organization does not have any questions or comments at this time.”

Has anyone read this report? Has your university taken a position regarding this report on scientific misconduct?

In meantime, Zeyuan Song and Zheyu Jiang published another article based on the falsification of the facts presented in our paper [Suciu et al. 2021]:

Article 3:
A Data-facilitated Numerical Method for Richards Equation to Model Water Flow Dynamics in Soil, Zeyuan Song, Zheyu Jiang, School of Chemical Engineering, Oklahoma State University, Stillwater, OK 74074, https://doi.org/10.48550/arXiv.2310.02806.

As well as in Articles 1 and 2, the motivation provided by the authors in Article 3 to sustain their proposed approach is that the relationship between the number of particles used in the GRW codes and the solution of the Richards equation “may not be smooth or explicit”:

“... a key assumption used in existing GRW implementations for solving the Richards equation is that the pressure head is proportional to the number of particles in a discretized cell, which is yet to be verified.” (page 3).

“... a key assumption made in existing GRW methods [28] is that ψm,s,i is proportional to nm,s,i for any iteration and time step. Although this assumption is shown to be valid for diffusion equations [30], we will show that, for the Richards equation, the actual relationship may not be smooth or explicit.” (page 10)

“As mentioned earlier, a key underlying assumption of existing GRW models is that ψm,s,i is proportional to nm,s,i .... the exact relationship between the number of particles and pressure head is neither smooth nor explicit.“ (page 14)

These statements represent a willful falsification because:
- the authors are aware that the one-dimensional GRW scheme for Richard’s equation is introduced in [Suciu et al., 2021] as a “randomization” that approximates the solution of the finite difference (FD) scheme by the number of random walkers: in Sect. 2 of our paper, it is clearly said that the GRW solution for the pressure head is just a representation of the FD solution by the distribution of N particles on the lattice sites;
- they are also aware that the two-dimensional solver is a FD scheme which does not use particles at all;
- I drew their attention to the falsity of these statements in two emails that I sent to Prof. Zheyu Jiang in January 2023, where I also showed them how to verify the equivalence of the GRW and FD schemes.

Though I haven't analyzed this article in detail, I notice two worrying aspects. First, even if the authors look for a relationship between the number of particles and the pressure head, results concerning this relationship are missing, if we except Fig. 2. The latter looks like the decrease of the pressure as function of the spatial variable, but is presented as “an increasing trend [of the pressure] with the number of particles” of the GRW solution compared to other two solutions. The GRW results represented Fig. 2 are completely fanciful.
To demonstrate that, and to illustrate numerically the representation of the pressure head-solution by particles, I uploaded a comparison between the GRW and the FD solutions to https://github.com/PMFlow/RichardsEquation/tree/main/1D/Richards_1D/GRWvsFD_SongJiang
The numerical results presented in this folder show that the relative error of the GRW solution with respect to the FD solution decrease as 1/N and for N>=1e18 it takes values of about 1e-16, which is the machine epsilon. This proves the consistency of the particle representation and invalidates the authors’ claim that the relation between GRW (number of particles) and FD (reference pressure head-solution) “is neither smooth nor explicit”.

The second issue is that the comparisons with other methods, meant to show the superiority of the method proposed by the authors are not trustworthy and verifiable, because neither the codes used nor the description of the algorithms are provided. I would like to remind you that in my comments to Article 2, where the authors used my own codes, I was able to demonstrate that they made up solutions to sustain, again, the superiority of their method.

I also note that the authors provide (as in Article 1 and Article 2 analyzed in my report) a wrong reference (https://github.com/PMFlow/FlowBenchmark) for the GRW codes presented in [Suciu et al., 2021]. Actually, they used the codes from https://github.com/PMFlow/RichardsEquation published on the site https://zenodo.org/records/4709693. This reference is not cited in neither of the three articles where the authors intensively used the GRW codes.

I would have liked not to have to write this report and possibly collaborate with the authors. Unfortunately, I was forced to do it because I strongly believe that the non-compliance with the correct scientific practices does not contribute to the progress of the science and to the prestige of the research institutions.

Follow-Up Questions/Comments

There are no questions asked or comments from the organization.

Chat Transcripts

There are no chat transcripts for this incident.