

Peer Review

Review of: "Arithmetic on Continued Fractions"

Bhaurao K. Lande¹

1. Datta Meghe Institute of Medical Sciences, Wardha, India

Here is my review:

Title: A New Notation for Arithmetic Expressions: Definition, Conversion and Evaluation

Review Summary

1. Contribution & Originality

The paper introduces a novel notation for arithmetic expressions called **Direct Data Driven Parenthesis-Free Notation (DDPN)**. It seeks to simplify parsing and evaluation of expressions by removing parentheses and relying instead on operand-centric data.

Strengths:

The idea of simplifying expression parsing through a notation change is interesting.

DDPN can potentially benefit compiler design and expression evaluation engines.

Suggestions:

The authors could strengthen their contribution by comparing DDPN not only with infix/postfix/prefix notations but also with AST (Abstract Syntax Trees) used in modern compilers.

It's not entirely clear how much more efficient DDPN is computationally—some performance benchmarks or complexity analysis would help validate the benefit.

2. Technical Accuracy and Methodology

The paper clearly explains the conversion from traditional notations to DDPN and vice versa. The inclusion of algorithms adds to the technical rigor.

Strengths:

Step-by-step examples of conversion.

Formal algorithmic representation for evaluation.

Suggestions:

Include edge cases and error handling scenarios (e.g., malformed expressions).

Add a complexity analysis of the conversion algorithm (time and space).

3. Clarity and Presentation

While the structure is mostly logical, there are some grammatical and formatting issues that reduce the paper's clarity.

Strengths:

Use of examples is commendable.

Diagrams and tables are helpful.

Suggestions:

Define all variables and functions used in algorithms.

4. Comparative Analysis

There is an attempt to compare DDPN with prefix, infix, and postfix notations.

Suggestions:

Strengthen this section by adding quantitative comparisons.

Consider practical use cases where DDPN would outperform traditional notations (e.g., streaming data parsing?).

Include a small benchmark test to compare expression evaluation times.

5. Conclusion and Future Work

The conclusion reiterates the benefits of DDPN, but future directions could be more specific.

Suggestions:

Mention how this work could be extended (e.g., application to programming languages, calculator engines, educational tools).

Address how DDPN might be implemented in a parser or interpreter stack.

Final Recommendation:

Accept with Minor Revisions

The paper introduces a fresh and potentially impactful idea, and the proposed notation appears to have practical merit. However, it would benefit from a language polish, deeper comparison with existing systems, and some performance analysis.

Declarations

Potential competing interests: No potential competing interests to declare.