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Peer Review

Review of: "DRC-Coder: Automated DRC Checker Code Generation Using LLM Autonomous Agent"

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The paper presents DRC-Coder, a novel multi-agent framework for automated Design Rule Check (DRC) code generation utilizing LLMs and VLMs. The system employs two specialized agents - a Planner for rule interpretation and a Programmer for code generation - along with three domain-specific tools for visual analysis and code evaluation. The approach is evaluated on a sub-3nm technology node, achieving perfect F1 scores and significantly reducing development time compared to manual coding.

Pros:

1. This paper presents the first automated DRC code generation framework using LLMs, significantly reducing engineering effort from weeks to minutes.
2. This paper introduces a well-designed multi-agent architecture that separates interpretation and coding tasks. It effectively integrates vision capabilities to enhance performance.
3. The framework demonstrates strong scalability and generalizability, with the potential to be extended to other EDA tasks requiring multi-modal reasoning.
4. The experimental results are impressive, with perfect F1 scores (1.000) on real sub-3nm technology rules.

Cons:

1. The experimental verification can be enhanced because it only tests seven design rules of NVCell. Some ablation studies can be added to enrich the experiment and compare and verify the effect of each stage of the DRC-Coder.
2. The figures need better organization, and the prompt structure should be presented more clearly.

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3. Insufficient discussion of limitations and failure cases.

The manuscript contains some typographical errors, notably in section 2.3 on page 6, which should be corrected for clarity.

Declarations

Potential competing interests: No potential competing interests to declare.