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Invention Title	EMBEDDING WATERMARK BASED ON MULTI-VARIABLE SIGNATURE ENCODING AT BEHAVIOUR LEVEL FOR REUSABLE IP CORE PROTECTION
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Abstract:

Disclosed is an embedding watermark during high level synthesis at behavior level for reusable IP core protection. In one implementation, the present invention generates low cost watermarking solution during high level synthesis (HLS) based on multi-variable signature encoding for security of reusable IP cores. The watermark generated by the proposed approach satisfies the following properties: (a) low embedding cost (b) robustness (c) low watermark creation time (d) strong proof of authorship (e) lower hardware overhead (f) fault tolerance. Comparison with similar technique revealed the present invention obtains watermarked solution with lower embedding cost with lesser storage overhead and creation/embedding time.

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Claims:1. A method for generating a watermarking solution based on multi-variable signature encoding embedded during high level synthesis (HLS) at behavioral level for security/protection of reusable IP cores, the method comprising:
 scheduling at least a controlled data flow graph (CDFG) comprising at least operations as nodes and interconnections between the nodes as edges based on at least a resource configuration received;
 inserting at least one storage variable in the CDFG scheduled;
 creating a colored interval graph to find at least a minimum number of registers required for allocation, the storage variables of scheduled CDFG indicate nodes in the colored interval graph;
 generating at least an original controller design based on the colored interval graph created;
 generating a signature representing watermarking constraints; and
 modifying the colored interval graph and the original controller design generated to embed the signature generated.

2. The method as claimed in claim 1, wherein the wherein the storage variable is inserted at the primary inputs/outputs and/or outputs of each node of the CDFG scheduled.

3. The method as claimed in claim 1, wherein creating the colored interval graph, further comprises:
 marking the nodes non-overlapping in time using same color;
 identifying edges between the nodes if the lifetime of nodes (storage variables) overlap in time.

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