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@ARTICLE{santos2009ijhpsa,  
  author = {Ricardo Santos and Rafael Batistella and Rodolfo  
Azevedo},  
  title = {A pattern based instruction encoding technique for high  
performance architectures},  
  journal = {International Journal of High Performance Systems  
Architecture},  
  year = {2009},  
  volume = {2},  
  pages = {71-80},  
  abstract = {In this paper we propose a new technique to reduce the  
program footprint and the instruction fetch latency in high  
performance architectures adopting long instructions in the memory.  
Our technique is based on an algorithm that factors long  
instructions into instruction patterns and encoded instructions,  
which contains no redundant data and it is stored into an I-cache.  
The instruction patterns look like a map to the decode logic to  
prepare the instruction to be executed in the execution stages.  
These patterns are stored into a new cache (P-cache). We evaluated  
this technique in a high performance architecture called 2D-VLIW  
through trace-driven experiments with MediaBench and SPEC programs.  
We compared the 2D-VLIW execution time performance before and after  
the encoding, and also with other encoding techniques implemented in  
computer architectures. Experimental results reveal that our  
encoding strategy provides a program execution time that is up to  
69% better than EPIC.},  
  issn = {1751-6528},  
  doi = {10.1504/IJHPSA.2009.032024},  
}
```