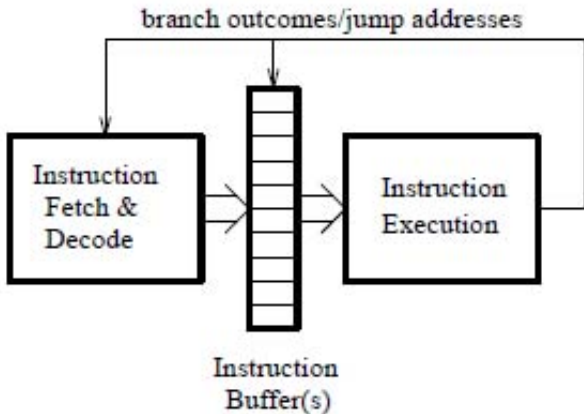


# Trace Cache

Divino César Soares Lucas e Raphael Moreira Zinsly

Instituto de Computação - UNICAMP

Arquitetura de Computadores  
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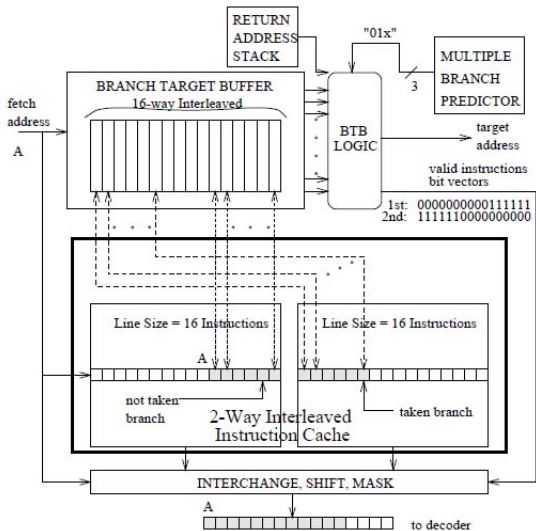


Bandwidth da busca de instruções pode se tornar um gargalo.

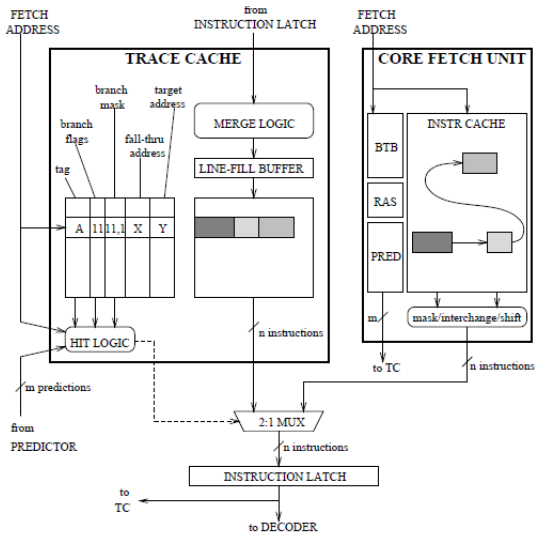
Outros fatores importantes:

- branch troughput
- alinhamento de instruções não-contínuo
- latência da unidade de busca

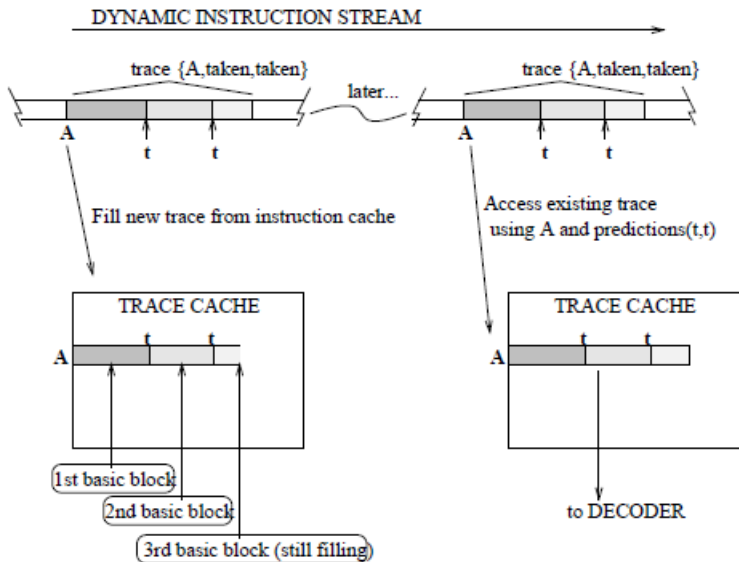
# Unidade de busca



# Trace Cache

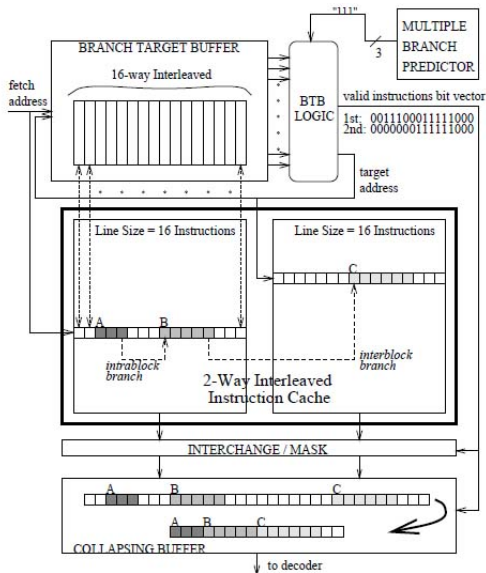


# Trace Cache



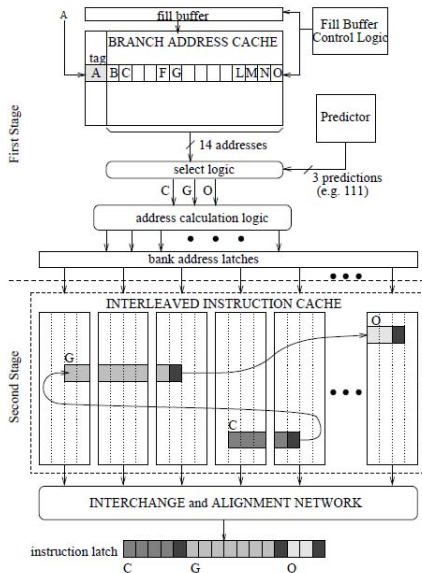
- 1 Associatividade;
- 2 Criação de traces;
- 3 Victim trace cache;
- 4 Seleção de segmento;
- 5 Decodificação;
- 6 Caminhos múltiplos;
- 7 Partial Matches.

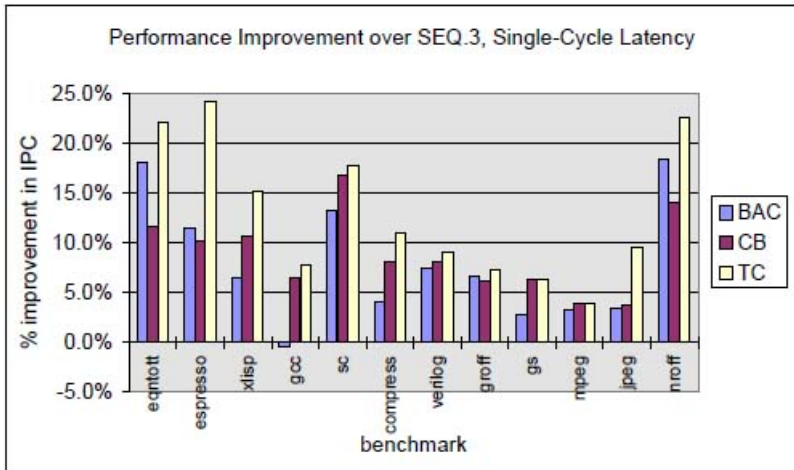
# Abordagem Alternativa - Collapsing Buffer

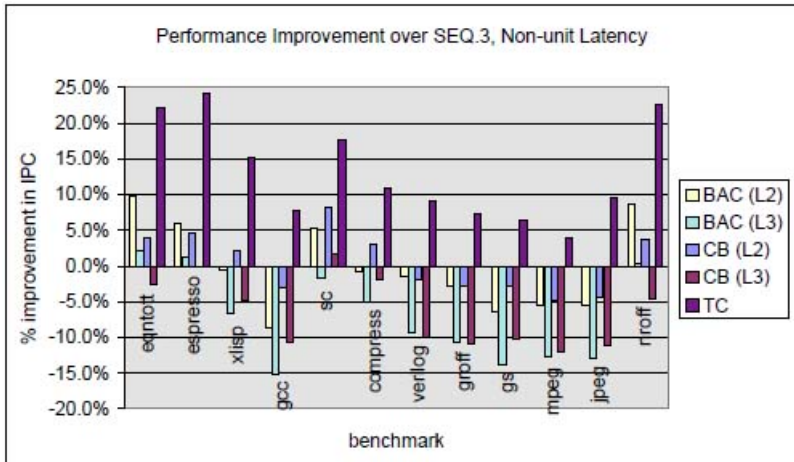




# Abordagem Alternativa - Branch Address Cache







- Buscar vários branches por ciclo sem aumentar a latência.
- Trace cache consegue.
- Se mostrou melhor que as alternativas.
- É preciso continuar melhorando.

E. Rotenberg, S. Bennet, and J. Smith. Trace cache: A low latency approach to high bandwidth instruction fetching. In *Proceedings of the ACM/IEEE International Symposium on Microarchitecture*. 1996.

S. J. Patel. Trace Cache Design for Wide-Issue Superscalar Processors. *Doctoral Thesis. University of Michigan*. 1999

D. H. Friendly, S. J. Patel, and Y. N. Patt. Alternative Fetch and Issue Policies for the Trace Cache Fetch Mechanism. In *Proceedings of Micro-30*. 1997

Obrigado!