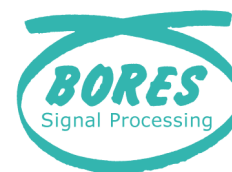


TriMedia Optimization basics: a 1-day class

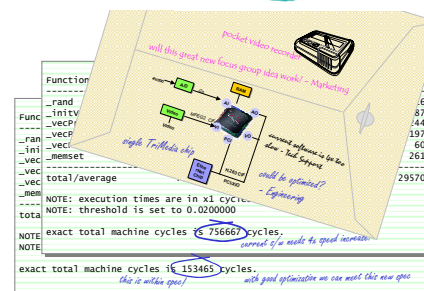
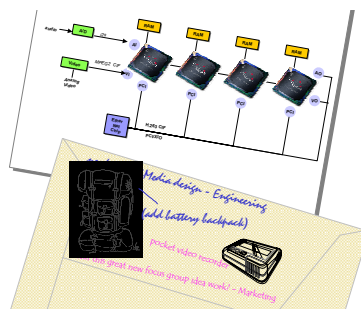


TriMedia Foundation

Benefits

- Increase program speed
- Use parallelism properly
- Lower hardware costs

Learn to increase the speed and reduce the size of TriMedia programs, by applying simple and straightforward strategies that work.



Optimizing: the alternative to bigger hardware

Contents

This session introduces the basic optimization strategies and tools. Sessions cover:

CPU and cache architecture

Learn how CPU and cache architectures affect program behavior and optimization.

- CPU and cache architectures
- Parallel scheduling

Profiling

Learn to investigate program behaviour and choose optimizations.

- Tree code and parallelism
- How to read schedule reports
- How to use profile reports

Optimization strategies

Why and how to choose an optimization strategy. Understanding levels of optimization.

- Increasing parallelism
- Reducing memory traffic
- Using the cache efficiently
- Using registers efficiently

Compiler optimizations

How and when to use compiler optimizations: what they do.

- Compiler optimization levels
- Unrolling, grafting and inlining
- Profile-driven optimization

Increasing parallelism

How to increase parallelism.

- Investigating parallelism in code
- Barriers to parallelism:
- Pointer (and array) aliasing

Reducing memory traffic

How to eliminate memory accesses.

- Avoiding implied memory loads
- Using packed memory data

Using cache efficiently

How to use the cache optimally.

- Keeping data in the cache
- Increasing temporal locality
- Organising data for the cache

Using registers efficiently

How to use the register file efficiently.

- Letting the compiler use registers
- Register-to-register operations
- Monitoring register usage

Custom operations

Why, when and how to use custom operations.

- SIMD - FIR example
- Pack and merge

Time and arrangements

This session takes 1 day.

It is presented 'on-site' by arrangement - the material can be adapted if you have specific needs (at extra cost).

Sometimes we arrange 'public' classes: schedules are posted on the Internet:

<http://www.bores.com/schedule.htm>

Advanced Optimization

We also offer a 4-day Advanced Optimization class. This is for engineers who already have experience with TriMedia. It is a 'hands-on' workshop.

Contact us:

- chris@bores.com

Booking and questions

Call us by 'phone or send email to book or to ask questions.

- contact: Dr Chris Bore
- 'phone: +44 (0)1483 740138
- mobile: +44 (0)7921 153219
- email: chris@bores.com

Foundation class

The 'TriMedia Foundation' is a 4-day class on all aspects of the TriMedia. It includes this class.

We recommend this be part of the 4-day TriMedia Foundation class but it can stand on its own or be part of a custom class.