Approach to
Data-Oriented Design

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Agenda

- Problem Statement
- Discussion About Possible Solutions
- What's the actual problem?
- Go Over the Problem
- Studing Better Impl.
- Q/A

Problem Statement

- Simulate behavior of, and Render massive ants crawling on a map
  - Each ant is a pixel
  - We’re going to benchmark and impl. some solutions
- Do you need more to know?

Let's Discuss

- What is our data?
- What is our behavior(s)?
- How do we render?

Let’s see the impl.

- How long should it take?
- Give me some solutions

Optimize

- Are we happy?
- Any other solution?

What's the actual problem?

- Cost of Abstractions
- Branch (mis)predictions
- Cost of hitting RAM
- Cache Misses
- So what's the next step?

Studing better impl.

Data-Oriented Design Principles

- If you don’t understand the data you don’t understand the problem.”
- Different problems require different solutions.
- If you have different data, you have a different problem.
- If you don’t understand the cost of solving the problem, you don’t understand the problem.
- If you don’t understand the hardware, language, compiler, OS you can’t reason about the cost of solving the problem.

Thank You!

- References
  - Anger Fog, Optimization Manuals https://agner.org/optimize
  - Richard Fabian, “Data-Oriented Design” http://dataorienteddesign.com/dodbook
  - Yaser Zhian, Data Oriented http://yzt.github.io/
- Any Questions?

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