**ECE4095 Final Year Project 2016**                    **James Anastasiou**

# Your Code Sucks: Here's how to fix it.
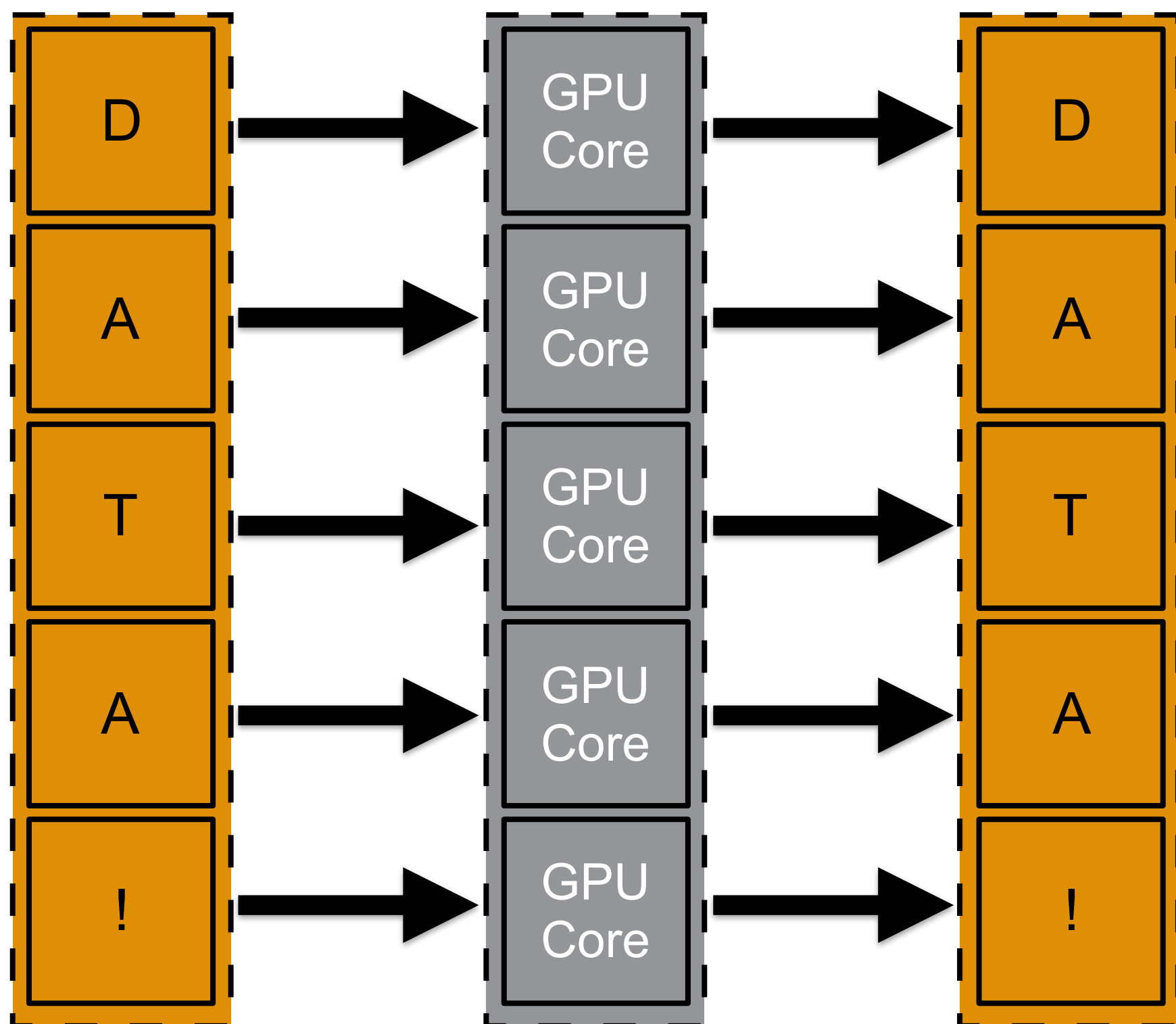
Supervisor: Dr. David Boland

# The Problem:

You write code like this.

| D | A | T | A | ! | → | CPU | → | D | A | T | A | ! |
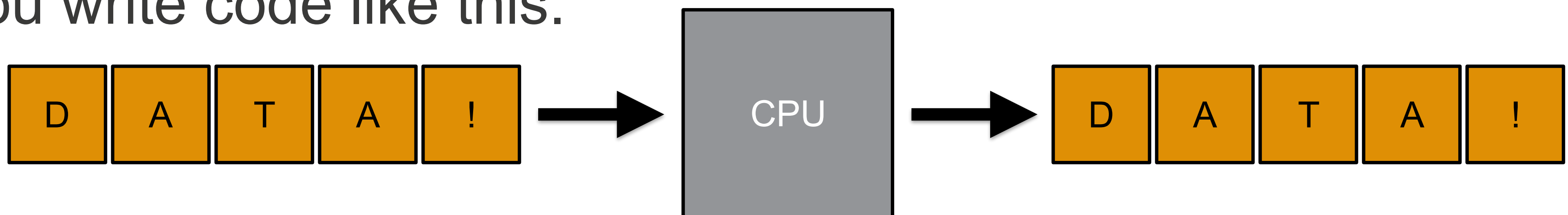
# The Solution:

Turn it into code like this.



# The Project:

Fixing code bit by bit.

CAPA is a static code analysis tool for identifying potential highly parallel algorithm implementations within your C codebase, that may be re-implemented on GPU hardware to provide a significant speed boost.

Interfacing with a benchmarking suite written for this project which measures the performance of Host vs Device implementations of a variety of algorithms from the publicly available Thrust[1] and Eigen[2] libraries; CAPA is able to make recommendations about which part of your code should provide the largest benefit of being refactored. CAPA is all about finding the low hanging fruit.

# Why go Parallel?



CPU     Matrix Dimensions (Square SGEMM)     GPU