MatCab

A Matrix Manipulation Language
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Overview

• A matrix manipulation language that uses C-like syntax but operates on Matrix easily.
• Support common matrix operations
  – Add, Minus, Multiply, Convolution, etc.
Motivation

• Easy to implement matrix operations
• Intended to manipulate GPU acceleration by CUDA language.
  – Did not implement this due to time limit
Tutorial

• Syntax feature
• Generate purpose program
Implementation

• Much like the MicroC compiler
• Scanner outputs the token stream
• Parser inputs the token stream and constructs an AST
• Compiler does semantic analysis and translate the MatCab code into Java code
Code Generation

• First verifies the program is semantically correct.
  – The function argument must match the formal list
  – An integer cannot be added to a matrix
  – Cannot do convolution against an integer

• Then translate it into Java code

• Use javac to compile and java to run
Lessons learnt

• Start EARLY
  – although repeated many times...

• Resolve technical risks at first

• How to lead a project team

• How to do things recursively
Thank You!