

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!