PIPS

Fabien Coelho
CRI, M&S, MINES-ParisTech

May 15, 2024

1 Private data structures for FREIA -SPOC

WORK IN PROGRESS. . .

A special DAG for FREIA (SPOC) code generation.

The *Generic Oriented Graph* provided by PIPS is both too minimal and too generic for my purpose.

Lists are used instead of sets (for preds, succs, vertices) to help determinism.

Import entity from "ri.newgen"

Import statement from "ri.newgen"

pstatement = persistant statement + empty:unit

vtxcontent = optype:int x opid:int x source:pstatement x inputs:entity* x out:entity

The operation (*optype*, *opid*) may not be commutative, thus the order of input images (*inputs*) is significant, and some adjustement may be necessary when mapping onto the hardware.

There is a lot of information kept here, possibly redundant (?), because it is/may be needed for regenerating the code.

Somehow I need in/out effects from within the sequence, or possibly use-def chains?

dagvtx = content:vtxcontent x succs:dagvtx*

What about the first and last vertices? They can be deduced because they do not have predecessors or successors?

dag = inputs:dagvtx* x outputs:dagvtx* x vertices:dagvtx*

The order of *vertices* in the list is the inverse of their occurence in the sequence, so that the first to produce an image is indeed to one that produced it if a variable is reused.

List *inputs* stores *external* inputs to the DAG. List *outputs* is for the nodes of the DAG which produce an image expected outside.