Monotone Data Flow Analysis Frameworks

Fengyun Liu, Ólafur Páll Geirsson

March 27, 2015

Today's agenda

Introduction

Background

Monotone Data Flow Analysis Frameworks

Approaches to solving MDFAF

A Variant of Kildall's Algorithm

Undecidability of MOP Problem for MDFAF

Overview

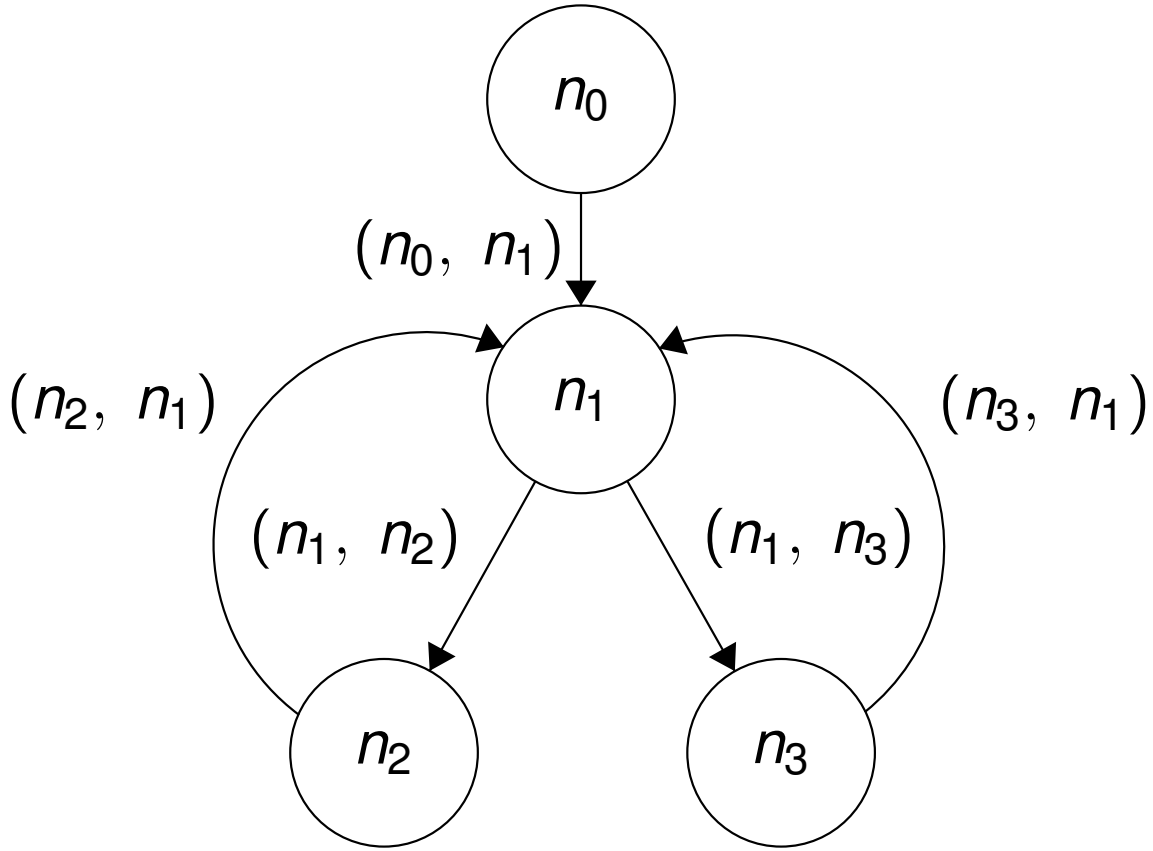
Introduction
- Flow graph
- Semilattice
- Semilattice: ordering
- Semilattice: 0 and 1

Background

Monotone Data Flow Analysis Frameworks

Approaches to solving MDFAF

Triple $G = (N, E, n_0)$



Example usage of blocks and columns

Block 1

- 1
- 2
- 3

Block 2

- b

Example usage of blocks and columns

Block 1

- 1
- 2
- 3

Block 2

- b

Example usage of blocks and columns

Block 1

- 1
- 2
- 3

Block 2

- b

Overview

Introduction

Background

Monotone Data Flow Analysis Frameworks

Approaches to solving MDFAF

A Variant of Kildall's Algorithm

Undecidability of MOP Problem for MDFAF

Overview

Introduction

Background

Monotone Data Flow Analysis Frameworks

Approaches to solving MDFAF

A Variant of Kildall's Algorithm

Undecidability of MOP Problem for MDFAF

Overview

Introduction

Background

Monotone Data Flow Analysis Frameworks

Approaches to solving MDFAF

A Variant of Kildall's Algorithm

Undecidability of MOP Problem for MDFAF

Overview

Introduction

Background

Monotone Data Flow Analysis Frameworks

Approaches to solving MDFAF

A Variant of Kildall's Algorithm

Undecidability of MOP Problem for MDFAF

Overview

Introduction

Background

Monotone Data Flow Analysis Frameworks

Approaches to solving MDFAF

A Variant of Kildall's Algorithm

Undecidability of MOP Problem for MDFAF