

AntGen EDSL

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Application:

Top-level strategy

How it works

How it should work

Library:

AntStrategies, AntMoves

EDSL:

AntImperative, AntInstruction

Imperative-ish constructs

Translation to Ant
assembly

Composing and transforming assembly blocks

Composing assembly blocks

Program transformations



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Table of Contents

Application: Top-level strategy

How it works

How it should work

Library: AntStrategies, AntMoves

EDSL: AntImperative, AntInstruction

Imperative-ish constructs

Translation to Ant assembly

Composing and transforming assembly blocks

Composing assembly blocks

Program transformations

Application:
Top-level
strategy

How it works

How it should work

Library:
AntStrategies,
AntMoves

EDSL:
AntImperative,
AntInstruction

Imperative-ish
constructs

Translation to Ant assembly

Composing and transforming assembly blocks

- Composing assembly blocks
- Program transformations



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How it works

Our main strategy consists of

- ▶ Draw “Highways” from the corners of the nest;
- ▶ Look for food using a “ricochet” movement;
- ▶ Use “Highways” to come back to the nest.

Application:
Top-level
strategy

How it works

Library:
AntStrategies,
AntMoves

EDSL:
AntImperative,
AntInstruction

Imperative-ish constructs
Translation to Ant assembly

Composing and transforming assembly blocks

- Composing assembly blocks
- Program transformations



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How it should work

- ▶ Protecting corners of the nest;
- ▶ Drawing local roads;
- ▶ Avoiding congestions.

Application:
Top-level
strategy

How it works

How it should work

Library:
AntStrategies,
AntMoves

EDSL:
AntImperative,
AntInstruction

Imperative-ish
constructs

Translation to Ant
assembly

Composing and
transforming
assembly blocks

Composing
assembly blocks
Program
transformations



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Ant strategies

Some examples of top-level strategies include:

- ▶ Ricochet walk;
- ▶ Random walk;
- ▶ Follow any pheromone track;
- ▶ Draw any pheromone track...

Application:
Top-level
strategy

How it works
How it should work

Library:
AntStrategies,
AntMoves

EDSL:
AntImperative,
AntInstruction

Imperative-ish constructs
Translation to Ant assembly

Composing and transforming assembly blocks

- Composing assembly blocks
- Program transformations



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Ant moves

Some examples of simple moves include:

- ▶ Safe move;
- ▶ Random choices;
- ▶ Interleaving strategies...

Application:
Top-level
strategy

How it works
How it should work

Library:
AntStrategies,
AntMoves

EDSL:
AntImperative,
AntInstruction

Imperative-ish
constructs
Translation to Ant
assembly

Composing and
transforming
assembly blocks

Composing
assembly blocks
Program
transformations



Imperative-ish constructs

We have developed some imperative-like constructs, in order to get a well defined flow in each program:

- ▶ Sequence;
- ▶ Loops (While, Forever);
- ▶ Conditionals (IfThen, IfThenElse, Side-Effect test, case);
- ▶ Boolean operators.

Application:
Top-level
strategy

How it works
How it should work

Library:
AntStrategies,
AntMoves

EDSL:
AntImperative,
AntInstruction

Imperative-ish
constructs

Translation to Ant
assembly

Composing and
transforming
assembly blocks

Composing
assembly blocks
Program
transformations



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Translation to Ant assembly

- ▶ EDSL datatypes;
- ▶ Semantic functions;
- ▶ Boolean algebra.

Application:
Top-level
strategy

How it works
How it should work

Library:
AntStrategies,
AntMoves

EDSL:
AntImperative,
AntInstruction

Imperative-ish
constructs

Translation to Ant
assembly

Composing and
transforming
assembly blocks

Composing
assembly blocks
Program
transformations



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Composing assembly blocks

- ▶ One composing function per imperative construct.
- ▶ Using supply monad to get ant states;
- ▶ Map AntState AntInstruction
 - with a initial and final state.

Application:
Top-level
strategy

How it works

How it should work

Library:
AntStrategies,
AntMoves

EDSL:
AntImperative,
AntInstruction

Imperative-ish
constructs

Translation to Ant assembly

Composing and transforming assembly blocks

- Composing assembly blocks
- Program transformations



Universiteit Utrecht

Program transformations

We have used two functions to get a full-working ant assembly code:

- ▶ Ghost-busters;
- ▶ Keys to line numbers.

Application:
Top-level
strategy

How it works
How it should work

Library:
AntStrategies,
AntMoves

EDSL:
AntImperative,
AntInstruction

Imperative-ish constructs
Translation to Ant assembly

Composing and transforming assembly blocks

Composing assembly blocks

Program transformations



Universiteit Utrecht