An Annotation System for Semi-Automatic Garbage Collection
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Motivation

Communication
Autonomous concurrent devices roaming freely collaborating via adhoc wireless networks.

Who is responsible for garbage collection?

Problem Statement

Devices consist of a set actors publishing and requiring services holding remote object references to actors on other devices.

Device
payment actor

Devices can never know if a remote reference is temporally lost or if it will be no longer accessible.

Device
printing actor

A combination of both:
Semi-Automatic Garbage Collection

Context-Aware Applications

Communication Failures

Ubiquitous Shopping Scenario

Devices consisting of a set of actors publishing and requiring services holding remote object references to actors on other devices.

The system can never know if a remote reference is temporally lost or if it will be no longer accessible.

Ubiquitous Shopping Scenario

Desktop
printing actor

Do not delete this reference, I'll come back

Ubiquitous Shopping Scenario

Ref{not(event(disjoint)) && var(status, "InProgress")}

Disconnections are frequent

Ubiquitous Shopping Scenario

Pointcut

Ref{time = requestResource(discount.getExpiryTime())}

ForAll{call(discounts.add(discount))}

ForAll{call(discover("shop"))}

Keep the reference

Adding a product to my wish list

Keep the reference

Keep the reference

Domain-specific language for garbage collection.

Acceptable

I do not need this reference by the end of the conference

Discard reference after disjoin

Reference valid for 15 days

I provide payment services

I provide payment services

pointcut

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Remark System as an Aspect

- Which events in relation to the remote object references (Annotations)
- Actions to be taken with the remote object references (Contract)

Solution

Annotation System as an Aspect

A combination of both:
Semi-Automatic Garbage Collection

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