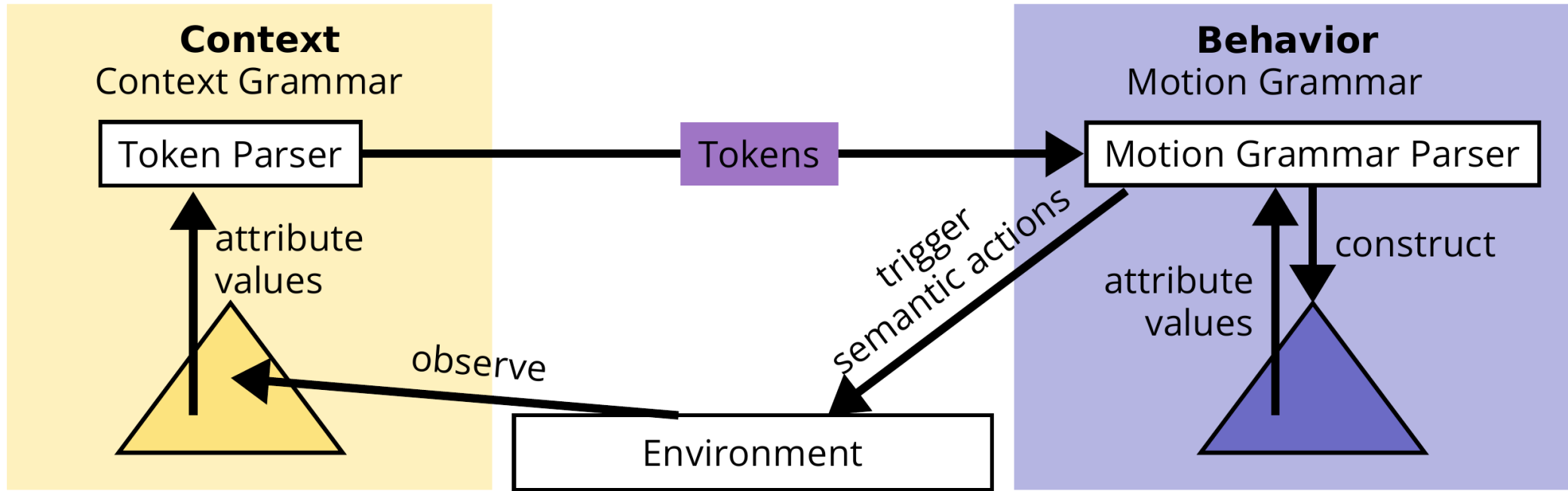


Motion Grammar

Context model and behavioural are *Reference Attribute Grammars (RAGs)*



Tokens

Tokens are parsed on the context model. They may require parameters and contain attributes.

Name	Parameters	Attributes	Explanation
EmptyTable			No movable objects are on the table
AvailableObject		Object:String	A movable object
RobotIsIdle			The robot is not moving
RobotHasItem Attached			The robot has an item attached
RightPlace	Object:String	Place:String	The right place for an object (determined using the decision table)

Motion Grammar

Tokens are parsed on the context model. They may require parameters and contain attributes

Tidy ::=

<¬EmptyTable>

MoveObjectToCorrectPlace*

<EmptyTable>

MoveObjectToCorrectPlace ::=

<AvailableObject && RightPlace>

PickUpObject/* uses Object */

DropObjectAtRightPlace/* uses Object, Place */

<RobotIsIdle && ¬RobotHasItemAttached>

PickUpObject/* requires Object */ ::=

ϵ

DropObjectAtRightPlace/* requires Object, Place */ ::=

<RobotIsIdle && RobotHasItemAttached>

Context Grammars

Robot Scene

```
RobotWorld ::=
    Table
    DemonstrationTable:Table
    Selection*
    /DecisionTree/

Table ::=
    PhysicalObject*
    Robot

abstract PhysicalObject ::=
    <Name>
    Pose
    <Color>

MovableObject : PhysicalObject
    ε

Bin : PhysicalObject
    ε

Pose ::=
    <X:double> <Y:double> <Z:double>
    <QX:double> <QY:double> <QZ:double> <QW:double>

Robot ::=
    <IsIdle:boolean>

rel Robot.AttachedItem? <-> MovableObject.AttachedRobot?
```

Interaction/Teaching Connection

```
Selection ::=
    <Object>
    <TimeStamp:java.time.Instant>
```

Decision Tree

```
abstract Node ::=
    ε

abstract SelectionNode : Node ::=
    Node*

abstract DecisionNode : Node ::=
    ε

DecisionTree : SelectionNode ::=
    ε

ColorSelection : SelectionNode ::=
    <Color>

SizeSelection : SelectionNode ::=
    <Size>

Decision : DecisionNode ::=
    <Target>
```