Two Armed Robot

STRIPS

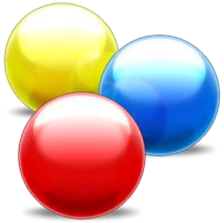
There is a robot that can move between two rooms and pick up or drop balls with either of his two arms. Initially, all balls and the robot are in the first room. We want the balls to be in the second room.

Objects: 2 rooms, 4 balls and 2 robot arms.
Predicates: room(x), ball(x), at-ball(b, r), free(x), etc.;
Initial state: all balls and the robot are in the first room, all robot arms are empty, etc.;
Goal specification: all balls must be in the second room.
Actions/Operators: the robot can move between rooms, pick up a ball or drop a ball.

© DLR Institute of Robots and Mechanics

Two Armed Robot

STRIPS: Domain File



```
(define (domain gripper-strips)
(:predicates (room ?r) (ball ?b) (gripper ?g) (at-robot ?r) (at ?b ?r) (free ?g) (carry ?o ?g))

(:action move
:parameters (?from ?to)
:precondition (and (room ?from) (room ?to) (at-robby ?from))
:effect (and (at-robot ?to) (not (at-robot ?from))))

(:action pick
:parameters (?obj ?room ?gripper)
:precondition (and (ball ?obj) (room ?room) (gripper ?gripper) (at ?obj ?room) (at-robot
?room) (free ?gripper))
:effect (and (carry ?obj ?gripper) (not (at ?obj ?room)) (not (free ?gripper))))

(:action drop
:parameters (?obj ?room ?gripper)
:precondition (and (ball ?obj) (room ?room) (gripper ?gripper) (carry ?obj ?gripper) (at-
robot ?room))
:effect (and (at ?obj ?room) (free ?gripper) (not (carry ?obj ?gripper)))) )
```

Two Armed Robot

STRIPS: Problem File

```
(define (problem strips-gripper2)
        (:domain gripper-strips)

        (:objects rooma roomb ball1 ball2 ball3 ball4 left right)

        (:init (room rooma) (room roomb) (ball ball1) (ball ball2)
        (ball ball3) (ball ball4) (gripper left) (gripper right) (at-robby
        rooma) (free left) (free right) (at ball1 rooma) (at ball2
        rooma) (at ball3 rooma) (at ball4 rooma))

        (:goal (at ball1 roomb) (at ball2 roomb) (at ball3 roomb) (at
        ball4 roomb))
)
```