# MASON

MASON is an open-source, multiagent, multi-domain, discrete-event simulation toolkit written in Java. It was designed to facilitate large-scale simulations and it provides tools for visualization in 2D and even in 3D.

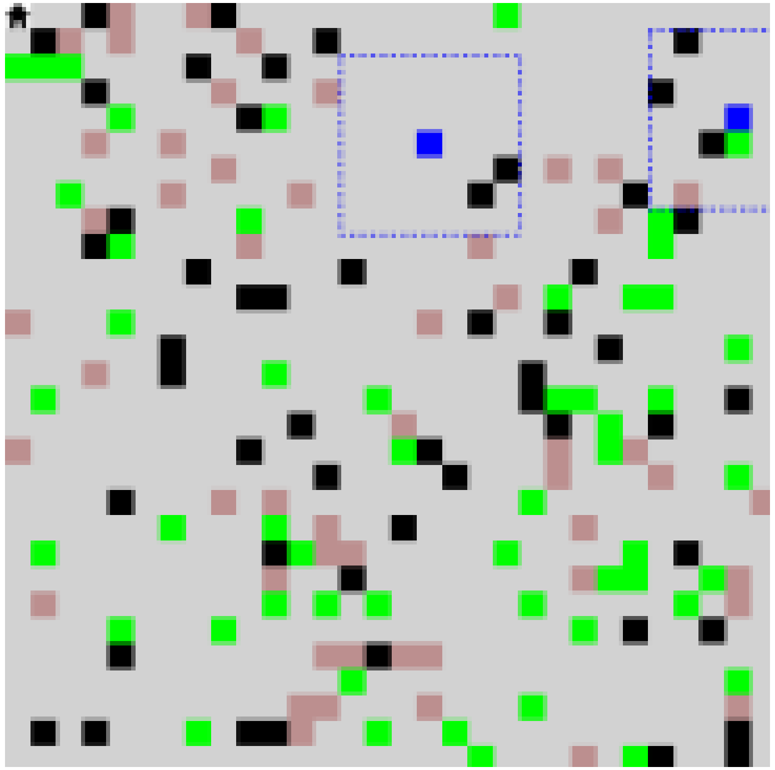
More information can be found at MASON is available at:

S. Luke, C. Cioffi-Revilla, L. Panait, and K. Sullivan, “Mason: A new multi-agent simulation toolkit,” in Proceedings of the 2004 SwarmFest Workshop, vol. 8, 2004. [Online].

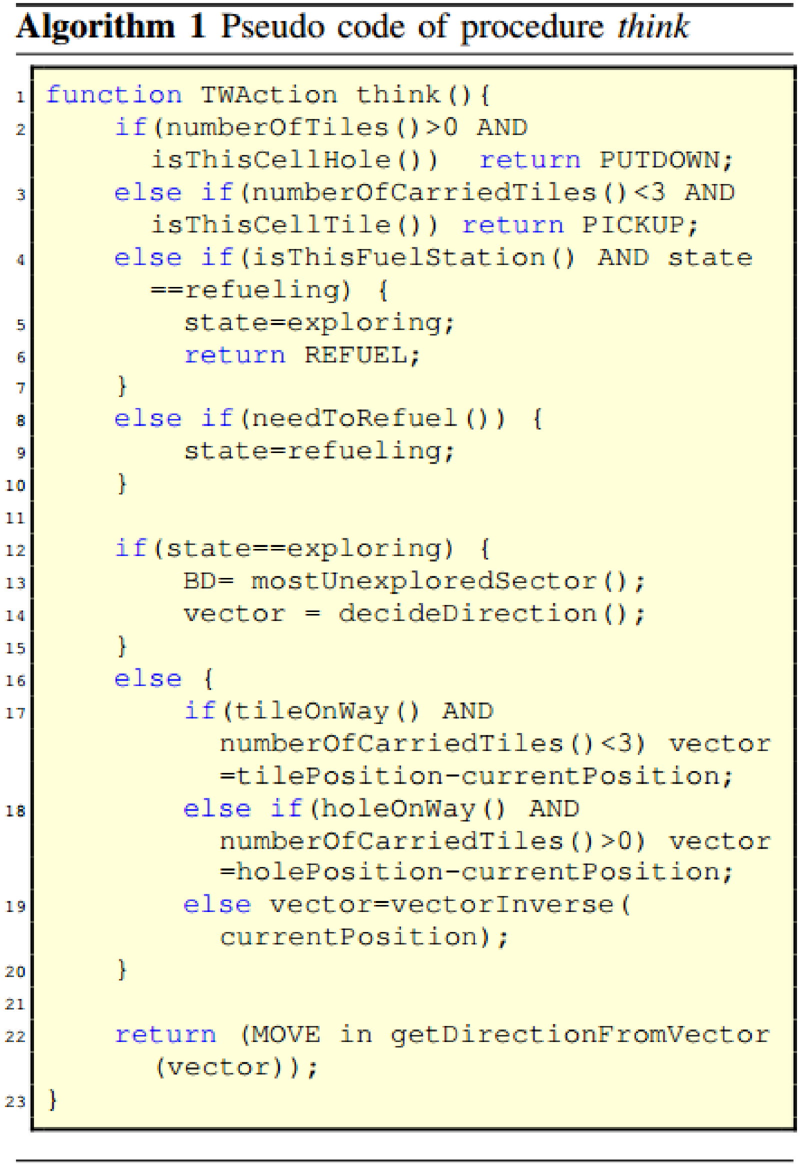
Available: http://cobweb.cs.uga.edu/~maria/pads/papers/mason-SwarmFest04.pdf

# Tileworld system based on MASON

Tiles are green, holes are purplish, obstacles are black, and agents are blue. Dashed lines around agents signify the range of their sensors.



# Algorithms

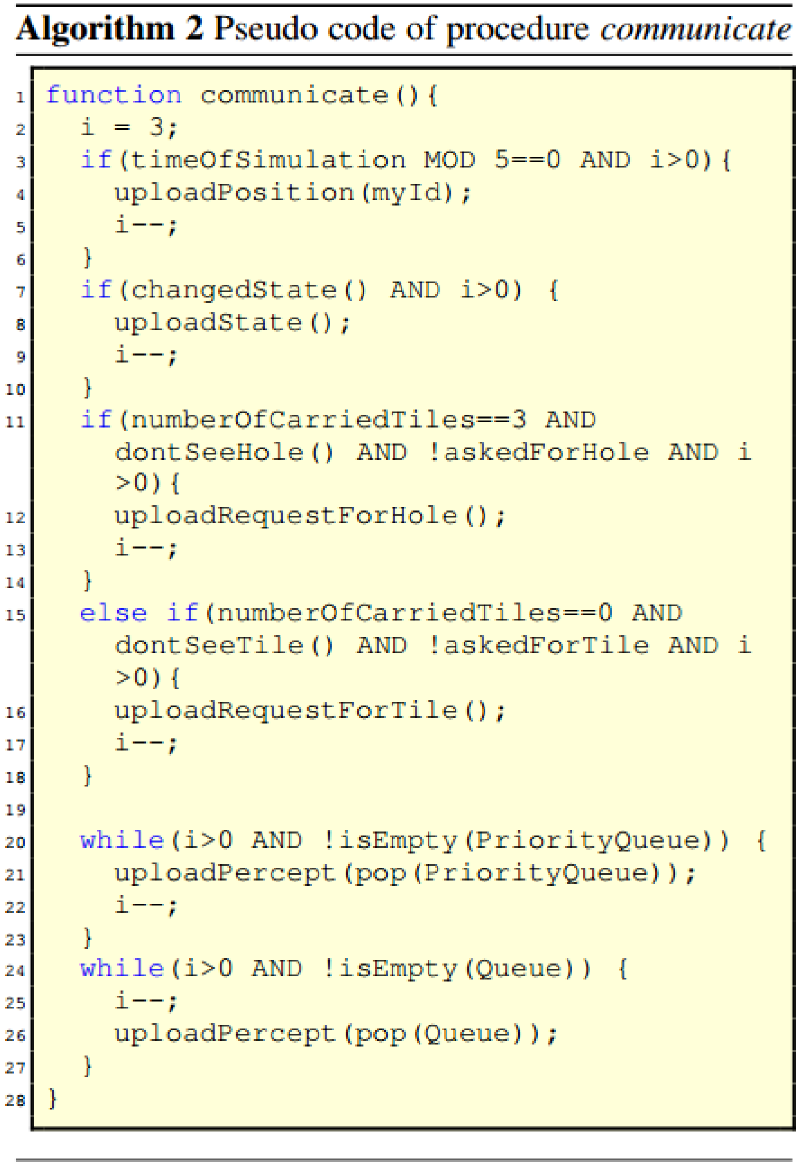


**Algorithm 1** Pseudo code of procedure *think*

```
function TWAction think(){
    if(numberOfTiles()>0 AND isThisCellHole())  return PUTDOWN;
    else if(numberOfCarriedTiles()<3 AND isThisCellTile()) return PICKUP;
    else if(isThisFuelStation() AND state==refueling) {
        state=exploring;
        return REFUEL;
    }
    else if(needToRefuel()) {
        state=refueling;
    }

    if(state==exploring) {
        BD= mostUnexploredSector();
        vector = decideDirection();
    }
    else {
        if(tileOnWay() AND numberOfCarriedTiles()<3) vector=tilePosition-currentPosition;
        else if(holeOnWay() AND numberOfCarriedTiles()>0) vector=holePosition-currentPosition;
        else vector=vectorInverse(currentPosition);
    }

    return (MOVE in getDirectionFromVector(vector));
}
```

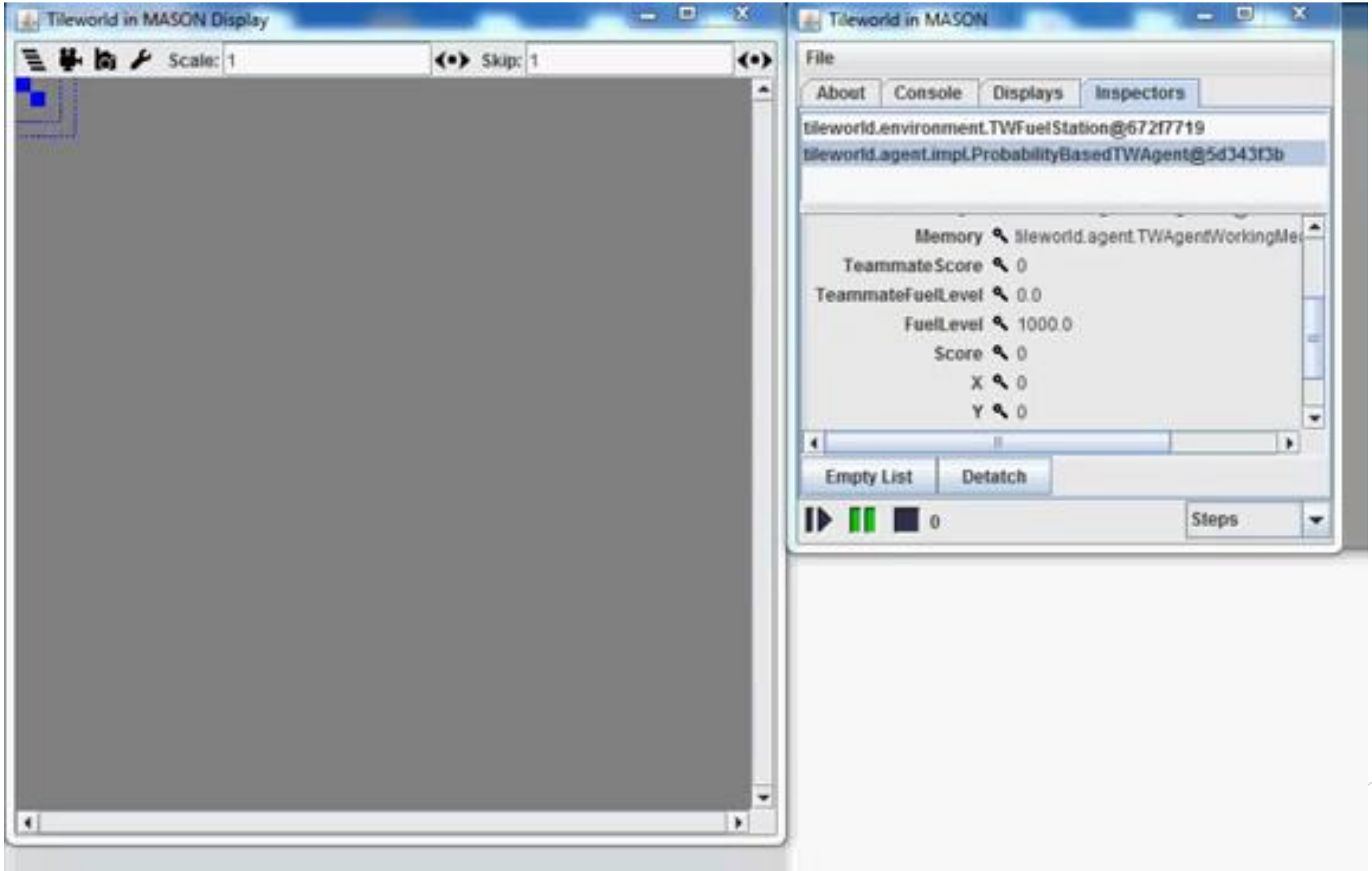


**Algorithm 2** Pseudo code of procedure *communicate*

```
function communicate(){
  i = 3;
  if(timeOfSimulation MOD 5==0 AND i>0){
    uploadPosition(myId);
    i--;
  }
  if(changedState() AND i>0) {
    uploadState();
    i--;
  }
  if(numberOfCarriedTiles==3 AND dontSeeHole() AND !askedForHole AND i>0){
    uploadRequestForHole();
    i--;
  }
  else if(numberOfCarriedTiles==0 AND dontSeeTile() AND !askedForTile AND i>0){
    uploadRequestForTile();
    i--;
  }

  while(i>0 AND !isEmpty(PriorityQueue)) {
    uploadPercept(pop(PriorityQueue));
    i--;
  }
  while(i>0 AND !isEmpty(Queue)) {
    i--;
    uploadPercept(pop(Queue));
  }
}
```

# Demo



tileworld.environment.TWFuelStation@672f7719

tileworld.agent.impl.ProbabilityBasedTWAgent@5d343f3b

Memory tileworld.agent.TWAgentWorkingMe

TeammateScore 0

TeammateFuelLevel 0.0

FuelLevel 1000.0

Score 0

X 0

Y 0