**General Actions**

Dribble

* Position ball right Infront of self
* Walk (maybe with reduced amplitude to keep control of the ball)

Walk(destination, amplitude, direction,

* Shift weight to left leg
* Lift right leg
* Move right leg forward
* Put right leg down
* Shift weight to right leg
* Lift left leg
* Move left leg forward
* Put right leg down
* Repeat
* Return legs to be even with each other when walking function is finished

Position behind the ball

* Walk(reduced amplitude, path radius)

Kick (right and left can be changed depending on which leg we want to kick with)

* Position behind the ball
* Shift weight to left leg
* Raise right leg
* Bring right leg back
* Swing right leg forward
* Return right leg back to starting position
* Put right leg down
* Distribute with between legs

Side step --> assuming the robots motions allows for this

* Walk(step direction)

Scan Environment

* Sensor input
* Identify team
* Identify opponent
* Identify ball
* Identify goal posts
* Determine self position on field

Pass to teammate

* Scan environment
* Find teammate that doesn’t have opponent near by
* Position behind the ball to aim
* kick

Position yourself for a pass

* Determine best position for pass
  + Scan environment
  + Identify best position to be in relation to ball, opponents, and net
* Walk (end position)
* Turn to face ball
  + Walk(reduced radius)
  + Stop walking at angle that leaves your pointing straights at your teammate with the ball

Move to open space --> kinda the same things as Position for a pass

Receive pass (condition that the ball is moving towards you)

* Shift weight to one leg
* Raise other leg
* Push forward raised leg a little bit to meet the ball
* Once ball has tapped your foot put the leg back down to standing position

Identify opponent with ball

* Scan environmentj
* Identify ball
* Identify opponents
* If ball is within a certain distance of an opponent player then assume they have the ball and mark them as the ball carrier and track them

Move to opponent with ball

* Scan envrionment
* See opponent is moving
* Quick calculation of speed and direction to create an approximation of where the opponent will be
* Return estimated coordinate
* Walk (estimated coordinates)

Attack opponent

* Identify opponent with the ball
* Walk towards the opponent
* Take larger steps to kick the ball out of the opponents possesion

Block shot/pass

* Determine that a show will be taking place
* Estimate the line of the shot
* Move in the line of the show

**Striker Actions**

Has ball

* Identify where ball is
* Identify where self is
* If self is within certain distance and no opponent is around conclude that self has the ball

Identify opponent with ball

* Scan environmentj
* Identify ball
* Identify opponents
* If ball is within a certain distance of an opponent player then assume they have the ball and mark them as the ball carrier and track them

Move to opponent with ball

* Scan environment
* See opponent is moving
* Quick calculation of speed and direction to create an approximation of where the opponent will be
* Return estimated coordinate
* Walk (estimated coordinates)

Move to ball

* Identify ball location
* Walk (ball location as destination)

Take possession of ball

* Identify opponent with the ball
* Walk towards the opponent
* Take larger steps to kick the ball out of the opponent's possession

Dribble

* Position ball right Infront of self
* Walk (maybe with reduced amplitude to keep control of the ball)

Pass to teammate

* Identify best teammate to pass to
* Position behind the ball to aim
* kick

Shoot

* Kick (right and left can be changed depending on which leg we want to kick with)
* Position behind the ball
  + Walk(reduced amplitude, path radius)
* Shift weight to left leg
* Raise right leg
* Bring right leg back
* Swing right leg forward
* Return right leg back to starting position
* Put right leg down
* Distribute with between legs

**Supporter Actions**

Has ball

* Identify where ball is
* Identify where self is
* If self is within certain distance and no opponent is around conclude that self has the ball
* Become striker if self has the ball

Ball free

* Scan environment
* If ball is not close enough to opponent or teammate or self then ball is free

Move to ball

* Identify ball location
* Walk (ball location as destination)

Take possession of ball

* Identify opponent with the ball
* Walk towards the opponent
* Take larger steps to kick the ball out of the opponent's possession

Move to opponent with ball

* Scan environment
* See opponent is moving
* Quick calculation of speed and direction to create an approximation of where the opponent will be
* Return estimated coordinate
* Walk (estimated coordinates)

Attack opponent

* Identify opponent with the ball
* Walk towards the opponent
* Take larger steps to kick the ball out of the opponents possesion

Receive pass (condition that the ball is moving towards you)

* Shift weight to one leg
* Raise other leg
* Push forward raised leg a little bit to meet the ball
* Once ball has tapped your foot put the leg back down to standing position

**Defender Actions**

Identify opponent with ball

* Scan environmentj
* Identify ball
* Identify opponents
* If ball is within a certain distance of an opponent player then assume they have the ball and mark them as the ball carrier and track them

Move to opponent with ball

* Scan environment
* See opponent is moving
* Quick calculation of speed and direction to create an approximation of where the opponent will be
* Return estimated coordinate
* Walk (estimated coordinates)

Take possession of ball

* Identify opponent with the ball
* Walk towards the opponent
* Take larger steps to kick the ball out of the opponent's possession

Move to ball

* Identify ball location
* Walk (ball location as destination)

Identify best position to receive pass

* Scan environment
* Identify straight line to the ball that doesn’t have opponents within a certain range of you

Get to position to receive pass

* Identify best position to receive pass
* Walk to that position
* Position yourself for a pass
  + Turn to face ball
    - Walk(reduced radius)
    - Stop walking at angle that leaves your pointing straights at your teammate with the ball

Receive pass (condition that the ball is moving towards you)

* Shift weight to one leg
* Raise other leg
* Push forward raised leg a little bit to meet the ball
* Once ball has tapped your foot put the leg back down to standing position

Identify best teammate to pass to

* Scan environment
* Flag teammate that has safe distance from the opponent

Pass to teammate

* Identify best teammate to pass to
* Position behind the ball to aim
* kick

Dribble

* Position ball right Infront of self
* Walk (maybe with reduced amplitude to keep control of the ball)

**Goalie Actions**

Track ball

* Scan environment
* Identify ball

Find best position to block

* Track ball
* Track self location in net
* Determine straight line between ball and center of goal
* Depending on the angle and attack and distance of defender to the net set the distance from the net out a little bit so the robot follows a radius arc for defending

Get in position

* Find best position to block
* Sidestep to the determined position

Block ball

* Arms out
* Legs a little wider
  + Sidestep one step

Pass to teammate

* Identify best teammate to pass to
* Position behind the ball to aim
* kick

Pass to teammate

* Scan environment
* Find teammate that doesn’t have opponent near by
* Position behind the ball to aim
* kick

Side step --> assuming the robots motions allows for this

* Walk(step direction)