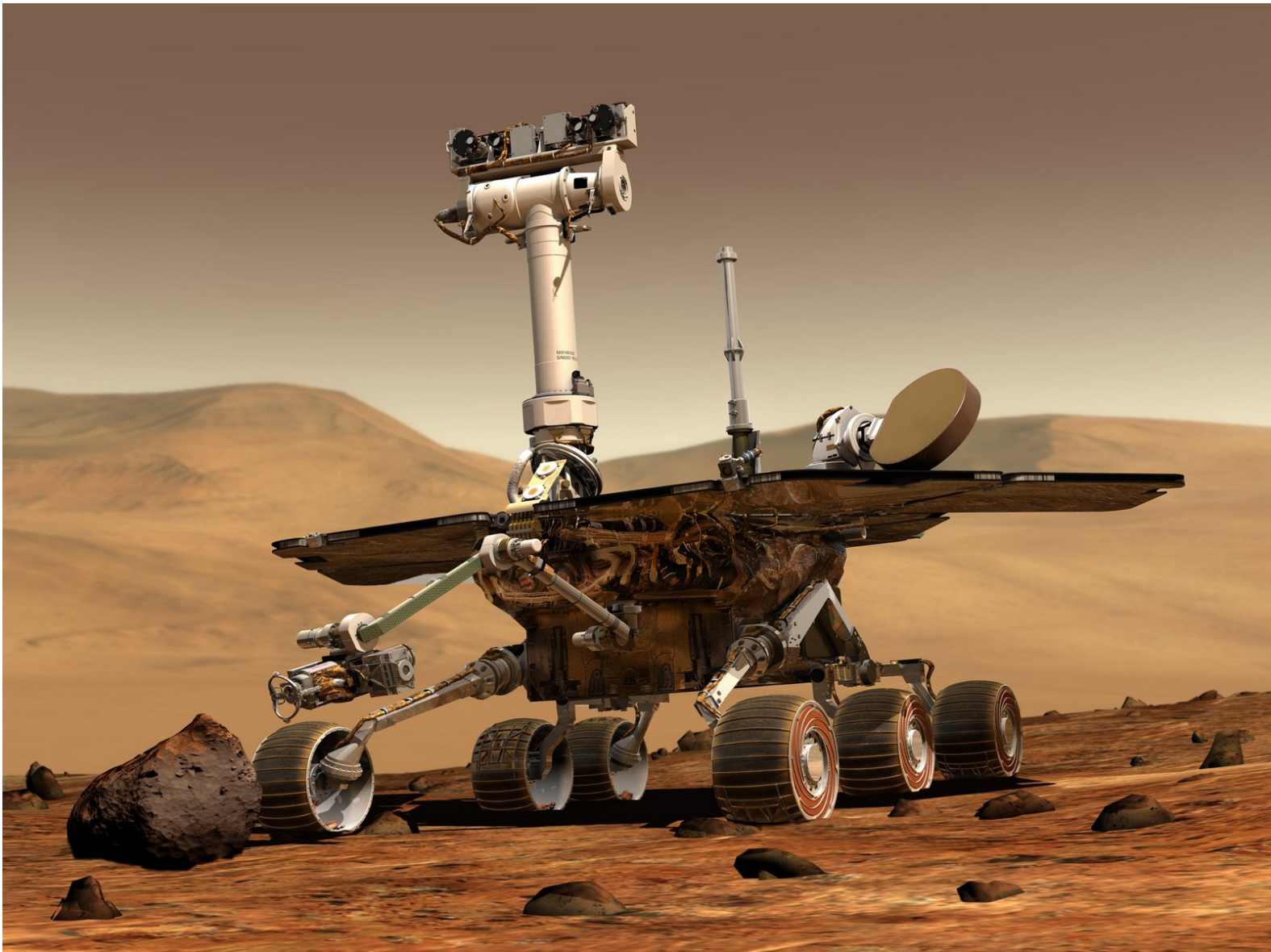


## C - Exploring the Planet

Our robot needs to do more than just move backwards and forwards if we are going to explore Mars - let's learn how to make it turn!



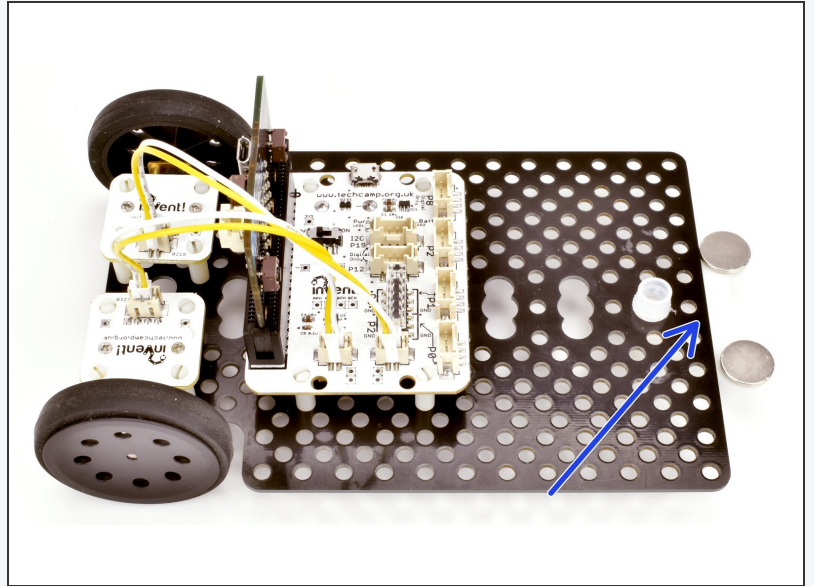
# INTRODUCTION

Our robot needs to do more than just move backwards and forwards if we are going to explore Mars - let's learn how to make it turn!

## Step 1

### Robot Setup

- Your robot should be setup in the same way as the previous section!
  - Make sure the **magnet module** is still attached.
- ⚠ Don't forget that the left motor should be plugged into M1, and the right motor into M2!



## Step 2

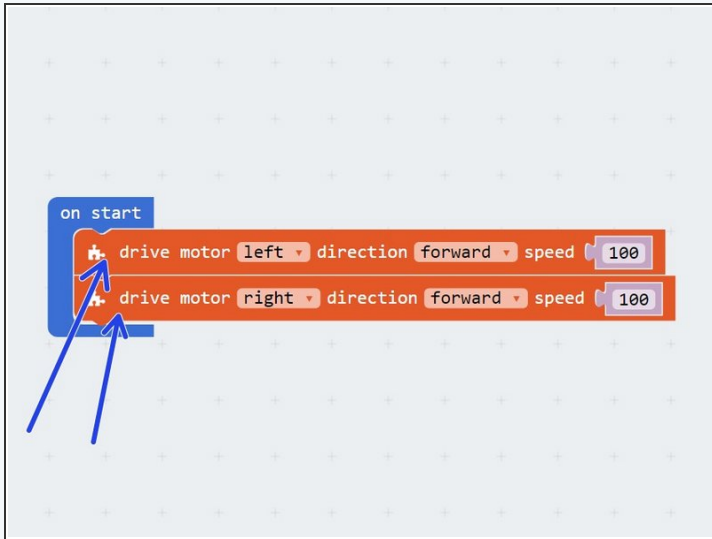
### How to turn



- Turning a car is easy - you can just rotate the wheels!
- However the wheels on most robots are **fixed**, so we have to do something different.
- Fixed wheel machines steer using '**skid steering**' - exactly the same way as a tank! You might have also seen small diggers that have 4 fixed wheels steering like this as well.
- Skid steering is easy - you just **increase or decrease the speed of one wheel**, and the robot will turn!

### Step 3

## Turning Test

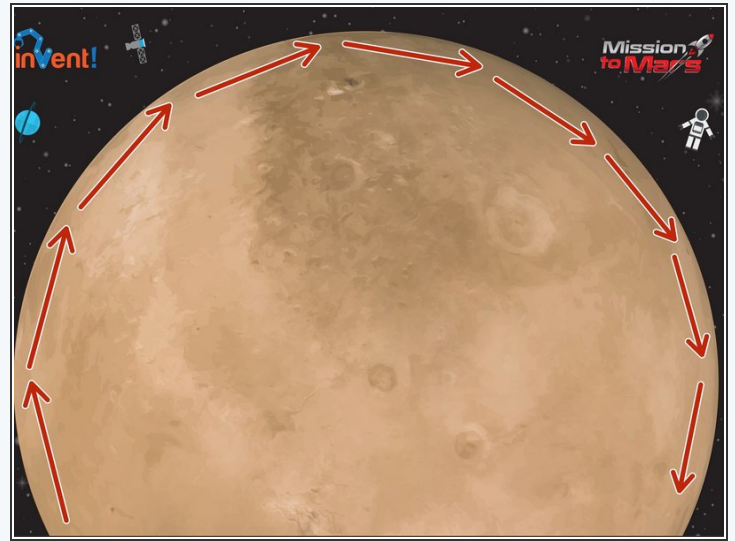
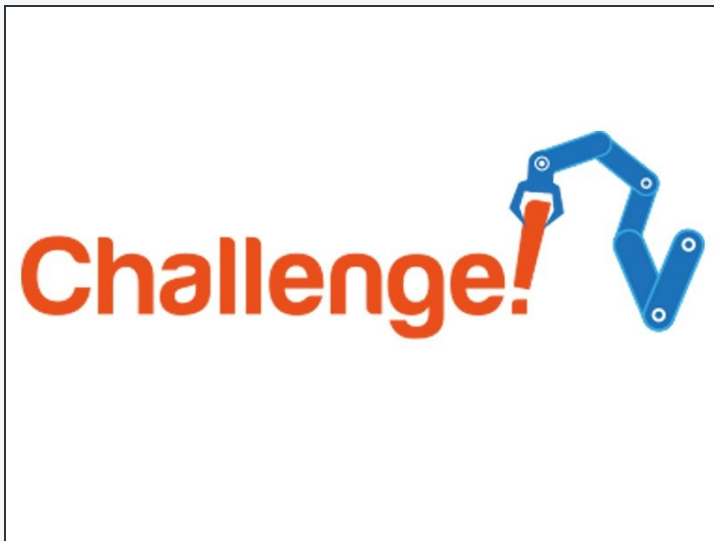


- Create a simple program to make your robot drive **forwards**, but use **2 separate motor blocks**, 1 for each wheel.
- Now **change the speed** of one of the wheels, and **upload your code**.
- Which way do you think the robot will turn? How can you make it turn faster? **Experiment and find out for yourself!**



## Step 4

### Turning Challenge



- Let's use what we've learned to **pickup** the stranded astronaut again.
- This time, pickup the astronaut by driving your robot **around the outside of the planet!** Try and stay as close as you can to the edge.

## Step 5

### Super Fast Turning!

- You may have worked this out already, but we can actually make our robot **spin on the spot** if we want to!
- Try making one motor go **forwards** at 100%, and the other **backwards** at 100%. Your robot should spin on the spot!

```
on start
  drive motor left direction forward speed 100
  drive motor right direction reverse speed 100
```

## Step 6

### Spinning Challenge

- Now we can turn the robot, let's pick up the astronaut by driving across the planet, but come back **facing forwards!**
- Write a program to go and **pick up** the astronaut, **turn** on the spot and drive back to base going **forwards**.

