The University of Western Australia
School of Engineering, Prof. Thomas Bräunl

Embedded Systems
ELEC3020

Semester Group Project	Sumo Bot	weeks 6-12

GROUPS: Form groups of 4 students
EQUIPMENT: Purchase your own equipment,
                            up to $50 will be reimbursed (receipts required)

GET STARTED
- Form a group of **4** students
- Register your group members with your lab demonstrator,
  who will give you a **group number**.

SUMO BOTS
- Drive in a black circular area of about 1m diameter, limited by a white line.
- Must find any other robot in the area and either push it outside or flip it over.
- Must not drive outside the line.
- Max size is 25cm x 25cm x 25 cm; max weight is 1kg; **these will be checked!**

IMPLEMENTATION
- Must use the provided TTGO ESP32 controller for controlling the vehicle.
- Must build their own chassis from scratch (cannot use published designs)
- Cannot use commercial boards, except motor controller
- Must indicate detected opponent on display or with dedicated LED

HINTS
- Angled front helps in pushing/flipping
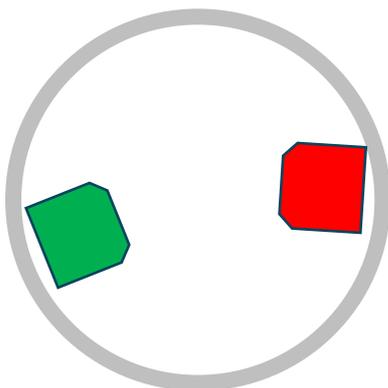- Sticky tires improve pushing force

Robots will be first tested against a passive dummy object, then in competition mode against each other. Competition scores will be part of the project mark.

DEMONSTRATION & COMPETITION
Practical performance and competition for all groups will be on Thu. of week 12. This includes answering questions from the lab demonstrators.
Competition will be random tournament style.
Robots will start from opposite sides.

SUBMISSION

1. One-minute video of your project journey
   To be submitted no later than **Mon. 9am of week 12.**

2. Documentation to be submitted on **Thu. 12noon of week 12** as a *single PDF document* via LMS + **printed copy** with cover sheet signed by all group members:

   2.1. Project design report, which includes:
   - Report on which team member did what
   - Hardware circuit diagram with explanations
   - Software design description and diagram
   - Include photos, screenshots, etc.
   - Include page numbers
   - Max 10 pages including title page

   Do not include:
   - Program code
   - Table of contents, etc.
   - Half-empty pages

   2.2. Project budget with "bill of material" in Excel format:
   - Part numbers and names
   - Part quantity
   - Price per part
   - Source (where purchased)

   2.3. User Manual:
   - As if it was sold to a customer
   - Max. 3 pages, no separate title page

   2.4. Marketing and sales document:
   - 1 page incl. photo and brief system description as if selling it on *eBay*

MARKING

40% Functional Performance
25% Competition Score
20% Project Design Report
 5% User Manual
 5% Budget
 5% Marketing Documents

GROUP NO: _____

Name1 _____   Name2 _____

Name3 _____   Name4 _____

LAB DEMONSTRATOR **SIGN OFF** Design (wk7): _____