



Freescale RACE CHALLENGE



- ▶ **University student competition based on slot car racing**
 - ▶ **The Goals are:**
 - To build a car that will drive on an unknown track **without student interfacing**.
 - To achieve the best time for 10+10 laps without dropping out of the track.
 - ▶ **The Objective is:**
 - **Map the track** shape during the first lap and use it to achieve a maximum speed in the following laps.
- How can the car map a track? **Accelerometer** measures centrifugal forces.

1st Prize = 600 €

Every participant who finishes the race will get a **prize!**

Organization

- Freescale Semiconductor Czech Republic (Organizer)
- FARO – Česká autodráha (Partner)
- Brno University of Technology
- University of Žilina
- Technical University of Ostrava
- AGH University, Krakow

Support from Freescale and Faro

Participant package

- Slot car FAVORIT
- PCB + Devices
 - Microcontroller S08JM32
 - Accelerometer MMA7361
 - H-Bridge MCZ33887
 - EEPROM 24AA512
 - other IC's and crystal
- OpenSourceBDM debugger
- CD including:
 - Development tools
 - PCB files. Datasheets
 - Quick Start guidelines
 - Example slot car embedded application



University package

- Pieces for various test slot car tracks



- Time Counter
 - time counter track piece
 - PC application



It's Easy To Go For It!

- Populate a provided PCB
- Build it into a provided slot car
- Create the slot car intelligence (development tools provided)
- Test it on the provided track

Competition Timeline



Competition Rules

Racing Rules

- Each contestant races separately against time.
- The time measurement is started on the first pass through the time counter and stopped after 10 laps.
- There are two race rounds and the sum of both race times will determine the final result.
- The slot car is placed to the right line of the track for the first round and to the left line for the 2nd round.
- The starting order is random for the first round and in reverse order to the intermediate results for the second round.

Track Properties

- The race track is unknown to the contestants until the race.
- The track length is in range 10 to 16 meters.
- The track voltage is constant 12V DC.
- The track can consist only from the following set of pieces produces by FARO:
 - Straights 280, 140, 60; Curves R470, R290
 - No crosses, no grade-separated junctions, no barriers.

Slot Car Properties

- The slot car FARO FAVORIT chassis, body, guide blade, motor and tires must be used.
- No traction magnet is allowed.
- All tires will be replaced by new ones just before the race.
- No remote control of the car is allowed.
- Only one switch allowing to choose between two modes of operation is allowed on the slot car.

Learn More: For current information about the competition, visit www.hw.cz/FRC2009.

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