

Robot Club Toulon : Electrical Presentation 2020

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Abstract. Keywords: RoboCup Soccer, Middle-Size League, Multi-robot, Actuator Modeling

1 Electrical Presentation

Electronics architecture of our robots is bio-inspired. The whole system is piloted by a *Neousys Nuvo-7160gc* embedded rugged computer acting like a cortex and doing *intelligent* tasks.

This cortex is connected to a second board doing repetitive and high frequency tasks such as sensor and motor management as shown in Fig. 1. This second board embeds a *Microchip DSP* having hardware peripherals for multi-threading tasks at a low level. Its schematic is too heavy for being displayed in this presentation, but a direct download link has been set-up on our web site for that : [download here](#)

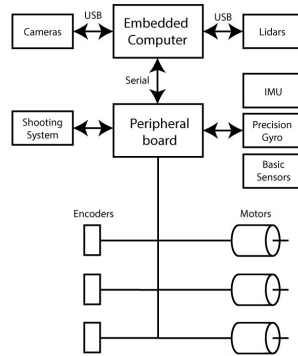


Fig. 1. RCT robots electronic bio-inspired architecture

Complex tasks such as LIDAR scene analysis, image processing and artificial intelligence are embedded in the computer, whereas high frequency motor control and sensors management is performed with the DSP using high speed interfaces such as USB, SPI or UARTs for synchronizing up to 20 different peripherals.

The kicking system is powered and piloted by a **third board**, independent for development and safety reasons due to high voltage. This board has been inspired by Cambada and Tech United designs and is shown at Fig. 3. It is designed for controlling up to 4 coils. Compared with older 2019 design, safety has been improved and cost has been lowered by using MOS transistor instead of IGBT. Its schematic is too heavy for being displayed in this presentation, but a direct download link has been set-up on our web site for that : [download here](#)

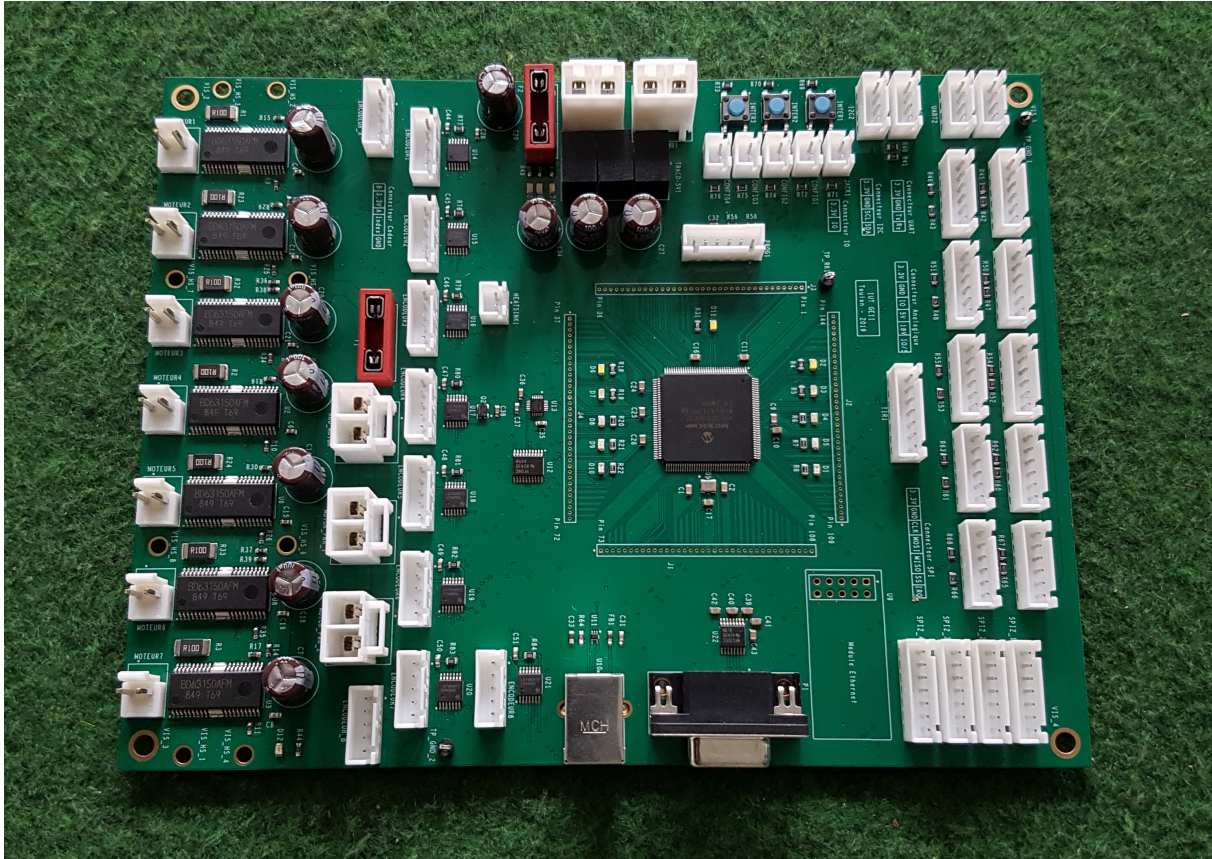


Fig. 2. Peripheral board

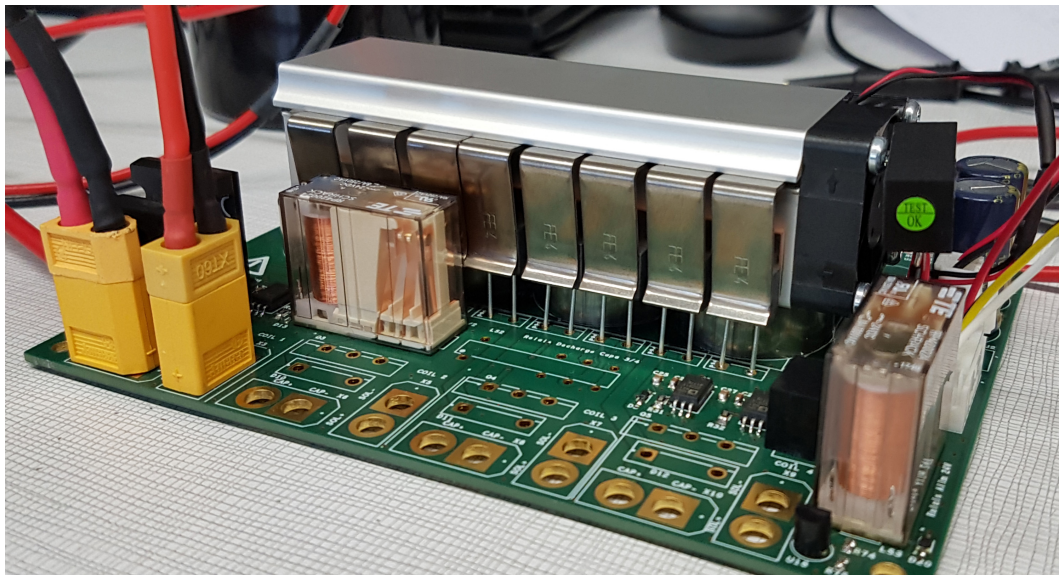


Fig. 3. Kicking system Board