

Rhoban Football Club – Robot Specification

Humanoid Kid-Size League, Robocup 2019 Sydney

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33405 Talence, FRANCE

1 Sigmaban+ (2019)



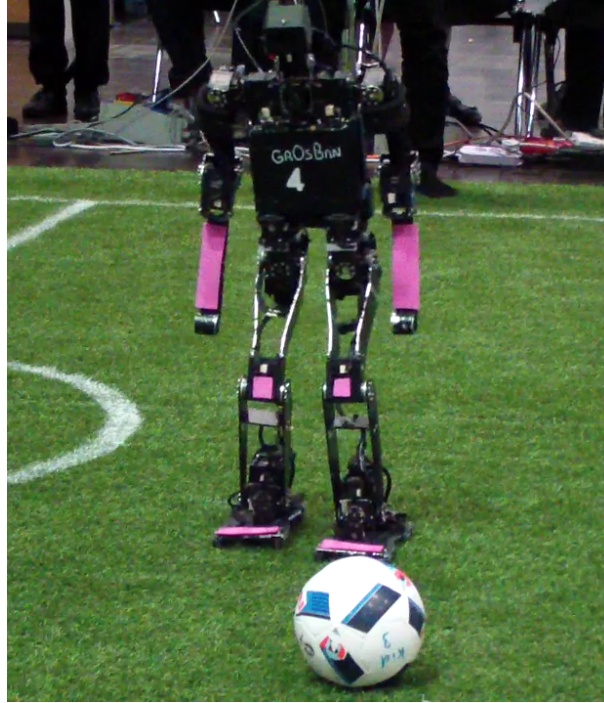
- **Robot name:** Sigmaban+
- **Height:** 64 cm
- **Weight:** 5.5 kg
- **Walking speed:** 35 cm/s
- **Motors:** 20 DOF
 - Neck: Dynamixel MX-64 (2 motors)
 - Upper Body: Dynamixel MX-64 (3 per arm)
 - Lower Body: Dynamixel MX-106 (6 per arm)
- **Sensors:**
 - Camera: Point Grey Blackfly GigE
 - IMU: 9 Degrees of Freedom - Razor
 - Foot Pressure: 4 Strain Gauge Sensors per foot
- **Computing units:**
 - Low-level: ARM7 (stm32) 72MHz (Maple mini)
 - High-level: Intel NUC
 - * Intel Core i5 AMD 1.2 GHz Micro-6700T
 - * 8GB RAM
 - * SSD 256Go
- **Operating System:** Linux (Debian 7)

2 Sigmaban+ (2018)



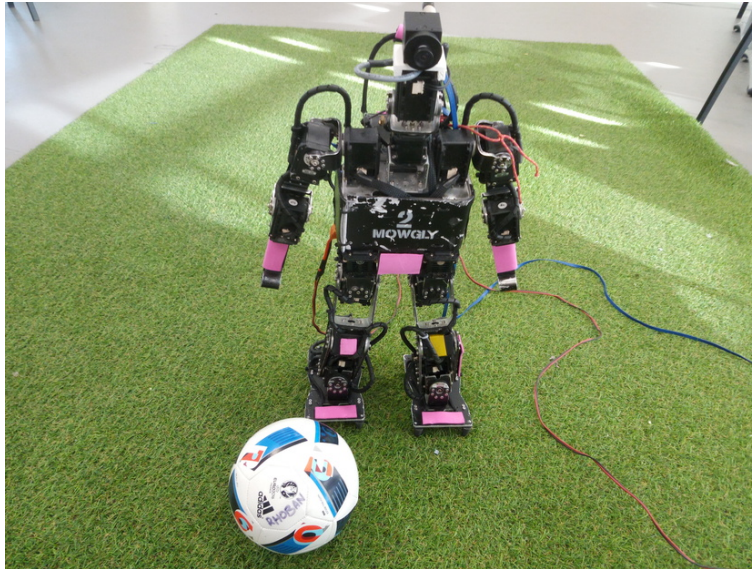
- **Robot name:** Sigmaban+
- **Height:** 64 cm
- **Weight:** 5.5 kg
- **Walking speed:** 35 cm/s
- **Motors:** 20 DOF
 - Neck: Dynamixel MX-28 (2 motors)
 - Upper Body: Dynamixel MX-64 (3 per arm)
 - Lower Body: Dynamixel MX-106 (6 per arm)
- **Sensors:**
 - Camera: Point Grey Blackfly GigE
 - IMU: 9 Degrees of Freedom - Razor
 - Foot Pressure: 4 Strain Gauge Sensors per foot
- **Computing units:**
 - Low-level: ARM7 (stm32) 72MHz (Maple mini)
 - High-level: Fitlet
 - * AMD 1.2 GHz Micro-6700T
 - * 2GB SDRAM
 - * SSD 128Go
- **Operating System:** Linux (Debian 7)

3 Grosban 1.1 (2017)



- **Robot name:** Grosban 1.1
- **Height:** 75 cm
- **Weight:** 4.5 kg
- **Walking speed:** 50 cm/s
- **Number of degrees of freedom:** 20
- **Type of motors:** Dynamixel MX-28 (upper body), Dynamixel EX-106 (lower body).
- **Sensors:**
 - Camera: Point Grey Blackfly GigE
 - IMU: 9 Degrees of Freedom - Razor
 - Foot Pressure: 8 Strain Gauge Sensors (4 per foot)
- **Computing units:**
 - Low-level: ARM7 (stm32) 72MHz (Maple mini)
 - High-level: fitlet, AMD 1.2 GHz Micro-6700T, 2GB SDRAM, SSD 128Go
- **Operating System:** Linux (Debian 7)

4 Sigmaban 1.5 (2017)



- **Robot name:** Sigmaban 1.5
- **Height:** 57 cm
- **Weight:** 4.2 kg
- **Walking speed:** 25 cm/s
- **Number of degrees of freedom:** 20
- **Type of motors:** Dynamixel MX-28 (upper body), Dynamixel MX-64 (lower body).
- **Sensors:**
 - Camera: Point Grey Blackfly GigE
 - IMU: 9 Degrees of Freedom - Razor
 - Foot Pressure: 8 Strain Gauge Sensors (4 per foot)
- **Computing units:**
 - Low-level: ARM7 (stm32) 72MHz (Maple mini)
 - High-level: fitlet, AMD 1.2 GHz Micro-6700T, 2GB SDRAM, SSD 128Go
- **Operating System:** Linux (Debian 7)

5 Grosban 1.0 (2016)



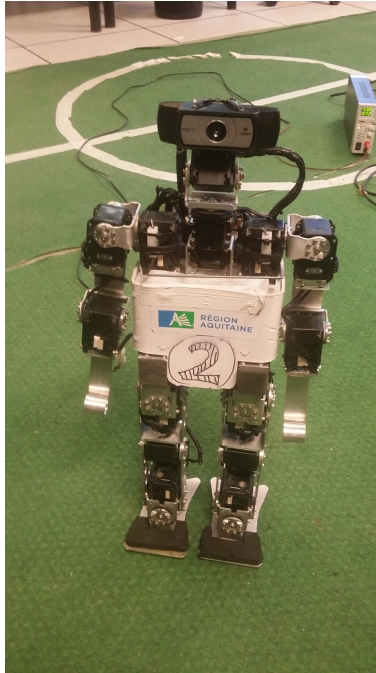
- **Robot name:** Grosban 1.0
- **Height:** 90 cm
- **Weight:** 6.5 kg
- **Walking speed:** 35 cm/s
- **Number of degrees of freedom:** 20
- **Type of motors:** Dynamixel MX-28 (upper body), Dynamixel EX-106 (lower body).
- **Sensors:**
 - Camera: See3CAM 11CUG (e-consystems)
 - IMU: 9 Degrees of Freedom - Razor
 - Foot Pressure: 8 Strain Gauge Sensors (4 per foot)
- **Computing units:**
 - Low-level: ARM7 (stm32) 72MHz (Maple mini)
 - High-level: fitlet, AMD 1.2 GHz Micro-6700T, 2GB SDRAM, SSD 128Go
- **Operating System:** Linux (Debian 7)

6 Sigmaban 1.4 (2016)



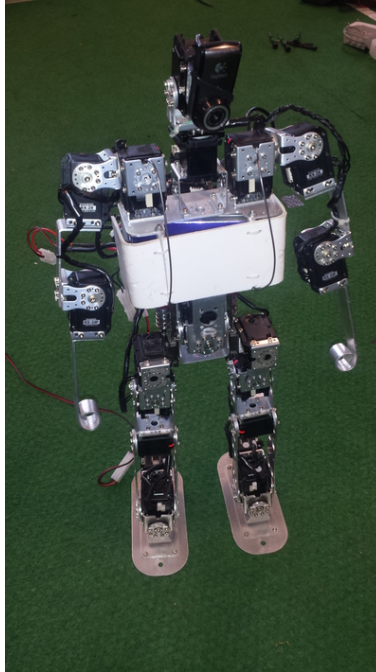
- **Robot name:** Sigmaban 1.4
- **Height:** 57 cm
- **Weight:** 4.2 kg
- **Walking speed:** 25 cm/s
- **Number of degrees of freedom:** 20
- **Type of motors:** Dynamixel RX-28 (upper body), Dynamixel RX-64 (lower body).
- **Sensors:**
 - Camera: See3CAM 11CUG (e-consystems)
 - IMU: 9 Degrees of Freedom - Razor
 - Foot Pressure: 8 Strain Gauge Sensors (4 per foot)
- **Computing units:**
 - Low-level: ARM7 (stm32) 72MHz (Maple mini)
 - High-level: fitlet, AMD 1.2 GHz Micro-6700T, 2GB SDRAM, SSD 128Go
- **Operating System:** Linux (Debian 7)

7 Sigmaban 1.3 (2015)



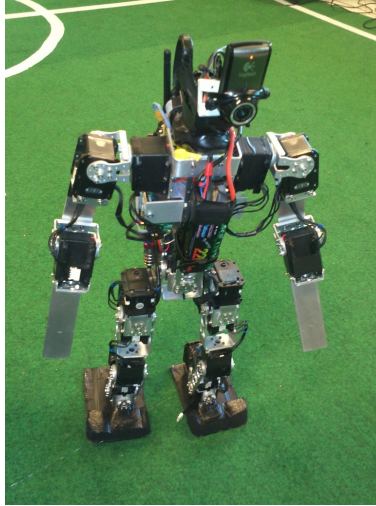
- **Robot name:** Sigmaban 1.3
- **Height:** 54 cm
- **Weight:** 3.8 kg
- **Walking speed:** 25 cm/s
- **Number of degrees of freedom:** 20
- **Type of motors:** Dynamixel RX-28 (upper body), Dynamixel RX-64 (lower body).
- **Sensors:**
 - Camera: Logitech HD Pro C930
 - IMU: 9 Degrees of Freedom - Razor
- **Computing units:**
 - Low-level: ARM7 (stm32) 72MHz (Maple mini)
 - High-level: fit-PC2, Intel Atom 1.6GHz, 2GB SDRAM, SSD 128Go
- **Operating System:** Linux (Debian 7)

8 Sigmaban 1.2 (2014)



- **Robot name:** Sigmaban 1.2
- **Height:** 56 cm
- **Weight:** 4.0 kg
- **Walking speed:** 12 cm/s
- **Number of degrees of freedom:** 22 actuated, one passive linear joint
- **Type of motors:** Dynamixel RX-24, Dynamixel RX-28, Dynamixel RX-64.
- **Sensors:**
 - Camera: Logitech HD Pro C905
 - IMU: 9 Degrees of Freedom - Razor
- **Computing units:**
 - Low-level: ARM7 (stm32) 72MHz (Maple mini)
 - High-level: fit-PC2, Intel Atom 1.6GHz, 2GB SDRAM, SSD 128Go
- **Operating System:** Linux (Debian 7)

9 Sigmaban 1.1 (2013)



- **Robot name:** Sigmaban 1.1
- **Height:** 56 cm
- **Weight:** 4.0 kg
- **Walking speed:** unknown
- **Number of degrees of freedom:** 22
- **Type of motors:** Dynamixel RX-28, Dynamixel RX-64.
- **Sensors:**
 - Camera Type: Logitech C905
 - Gyroscope: IDG500
 - Accelerometer: ADXL335.
 - FSR force sensor (feet)
 - Potentiometers (hip linear passive joint)
- **Computing unit(s):** FitPC 2GB SDRAM, 1.6GHz ARM7, 64KB RAM, 55MIPS.

10 Sigmaban 1.0 (2011)



- **Robot name:** Sigmaban 1.0
- **Height:** 56cm
- **Weight:** 3.7 kg
- **Walking speed:** 0.15m/s
- **Number of degrees of freedom:** 22
- **Type of motors:** Dynamixel RX-28, Dynamixel RX-64.
- **Sensors:**
 - Camera Type: Philips SPC620NC
 - Gyroscope: IDG500
 - Accelerometer: ADXL335.
- **Computing unit(s):** ARM9, 64MB SDRAM, 210MHz
ARM7, 64kB RAM, 55 MIPS.