GNBoard (Shield for Arduino Mega) — Schematic

Power Switch
SW1A, B, C, PowerSwitch, A, P1 Battery

Buzzer connector
Buzzer, 47 R18, P3 Spk

I2C Bus
R10, R9, I2C_SCL, I2C_SDA, P2 I2C_1

SHIELD1 — ARDUINO_MEGA_SHIELD (Arduino MEGA)
ResetB, RST, +3V3, 3V3, 5V, GND1, GND2, V_IN
AREF, GND3, Button1
13, 12, 11 — LedB
10 — LedG
9, 8 — LedR
Buzzer
BattVolt — AD0
LDR4 — AD1
LDR1 — AD2
LDR2 — AD3, AD4
LDR3 — AD5, AD6, AD7
7, 6, 5, 4, 3, 2 — Servo1, Servo2, Servo3, Servo4
TX0, RX0 — Servo5
V_IR1 — AD6
V_IR2 — AD7
V_IR3 — AD8, AD9
V_IR4 — AD10, AD11
DHTpin — AD12, AD13, AD14, AD15
Nose_Vout
14 — Nose_heat
15, 16, 17 — CNY1
18 — CNY2
19 — CNY3
20 — CNY4
SDA, SCL, 21 — XB_DIN, XB_DOUT
5V_4, 5V_5 — I2C_SDA, I2C_SCL
GND4, GND5
53 PB0_(SS), 52 PB1_(SCK), 51 PB2_(MOSI), 50 PB3_(MISO)
49 PL0, 48 PL1, 47 PL2, 46 PL3, 45 PL4, 44 PL5, 43 PL6, 42 PL7
41 PG0, 40 PG1, 39 PG2, 38 PD7
PA0 22, PA1 23, PA2 24, PA3 25, PA4 26, PA5 27, PA6 28, PA7 29
PC7 30, PC6 31, PC5 32, PC4 33, PC3 34, PC2 35, PC1 36, PC0 37

Voltage Regulator (5V)
Range: 7V-20V (Meant for 2x9V batteries)
U1 LM2576, VIN, ON/OFF, GND, VOUT, FB
C1 100uF (Rated 20V)
D1 1N5822
L1 100uH
C2 1000uF

Button 1
SW2 SW_PUSH — Button1

Reset button
SW3 SW_PUSH — ResetB

Battery Voltage Divider
R1 62k, R5 20k, BattVolt
0-20V, 0-5V

Servo connectors
Servo1 K3 SERVO_1, Servo2 K4 SERVO_2, Servo3 K5 SERVO_3
Servo4 K6 SERVO_4, Servo5 K7 SERVO_5

Decoupling caps
C3 100uF, C4 100uF

RGB Led
LedR R2 330, LedG R3 330, LedB R4 330
LED1 LED_RCGB

IR distance sensor connector
IR1 K1, IR2 K2, IR3 K9, IR4 K10 — V_IR1, V_IR2, V_IR3, V_IR4

CNY70 pins
CNY1 K11 CNY_1, CNY2 K12 CNY_2, CNY3 K13 CNY_3, CNY4 K14 CNY_4

Temp. and Hum. sensor (DHT11)
R12 10k, P6 DHT_Conn, DHTpin

Electronic nose (TGS 2600 and alike)
Heater — Nose_heat, R13 10k, NPN Q1, P10 Nose_Heater
Inductive loads would require flyback diode
Minimum: 7 Ohm (Imax=0.8A @ 5V)
Sensor — P11, Nose_Sense P9, R11 10k, Nose_Vout
The layout allows to solder the sensor directly or with a three wire cable

LDR connector
LDR_1 P2, LDR_2 P5, LDR_3 P7, LDR_4 P8
LDR4 R6 33k, LDR3 R7 33k, LDR2 R8 33k, LDR1 R9 33k

XBEE wireless interface
M1 XBee Radio
C5 100uF
VCC@1, DOUT, DIN, CD/DOUT_EN/DO8, RESET#, RSSI_PWM, RESERVED@7, RESERVED@8, DTR/SLEEP_RQ/DI8, GND@10
AD0/DIO0, AD1/DIO1, AD2/DIO2, AD3/DIO3/COORD_SEL, AD6/DIO6/RTS#, AD5/DIO5/ASSOC, VREF, ON/SLEEP#, DIO7/CTS#, AD4/DIO4/RF_TX
XB_DOUT R15 4k7, XB_DIN R16 4k7, R17 7k5
XBEE

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