
JEHU 2

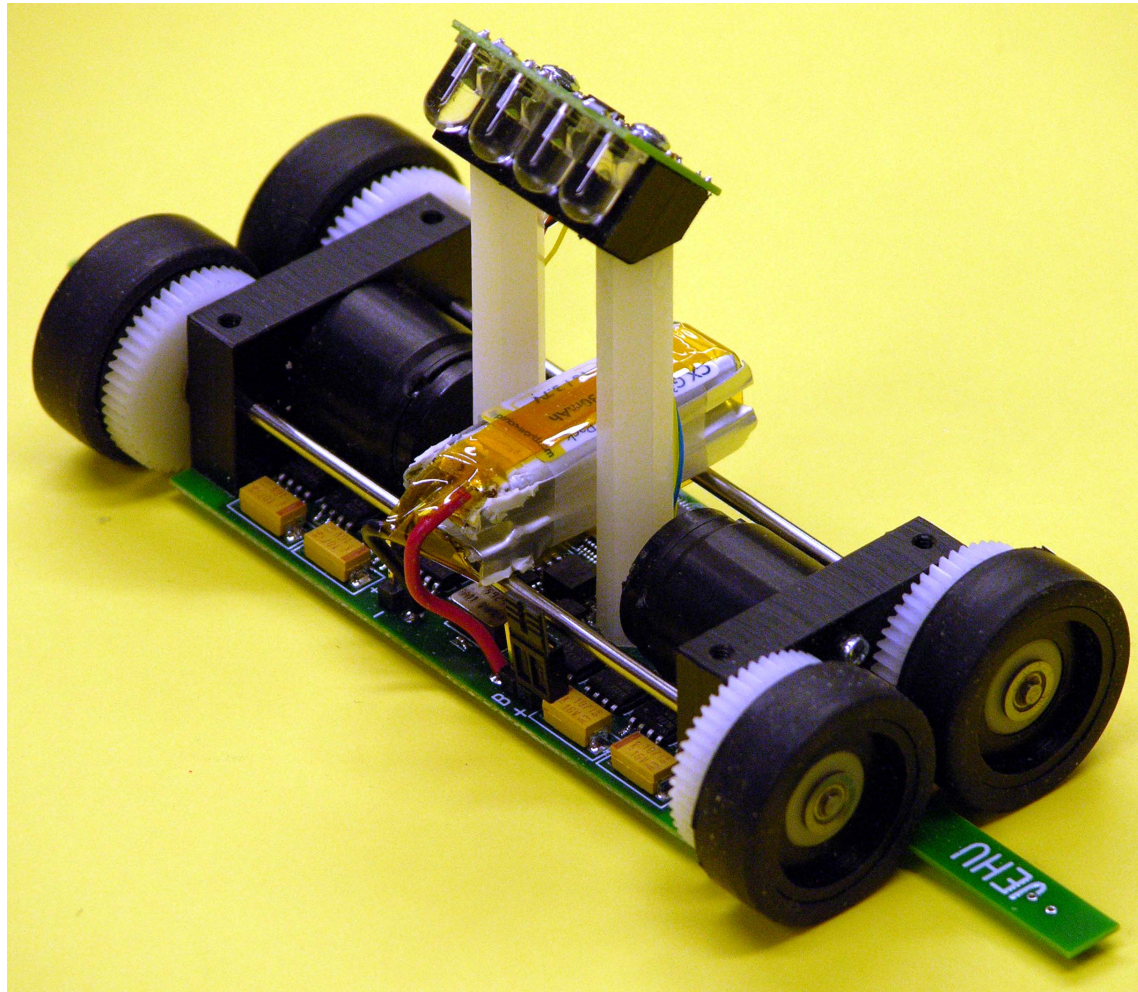
MINOS '17

Birmingham

David Otten



Jehu – Front View

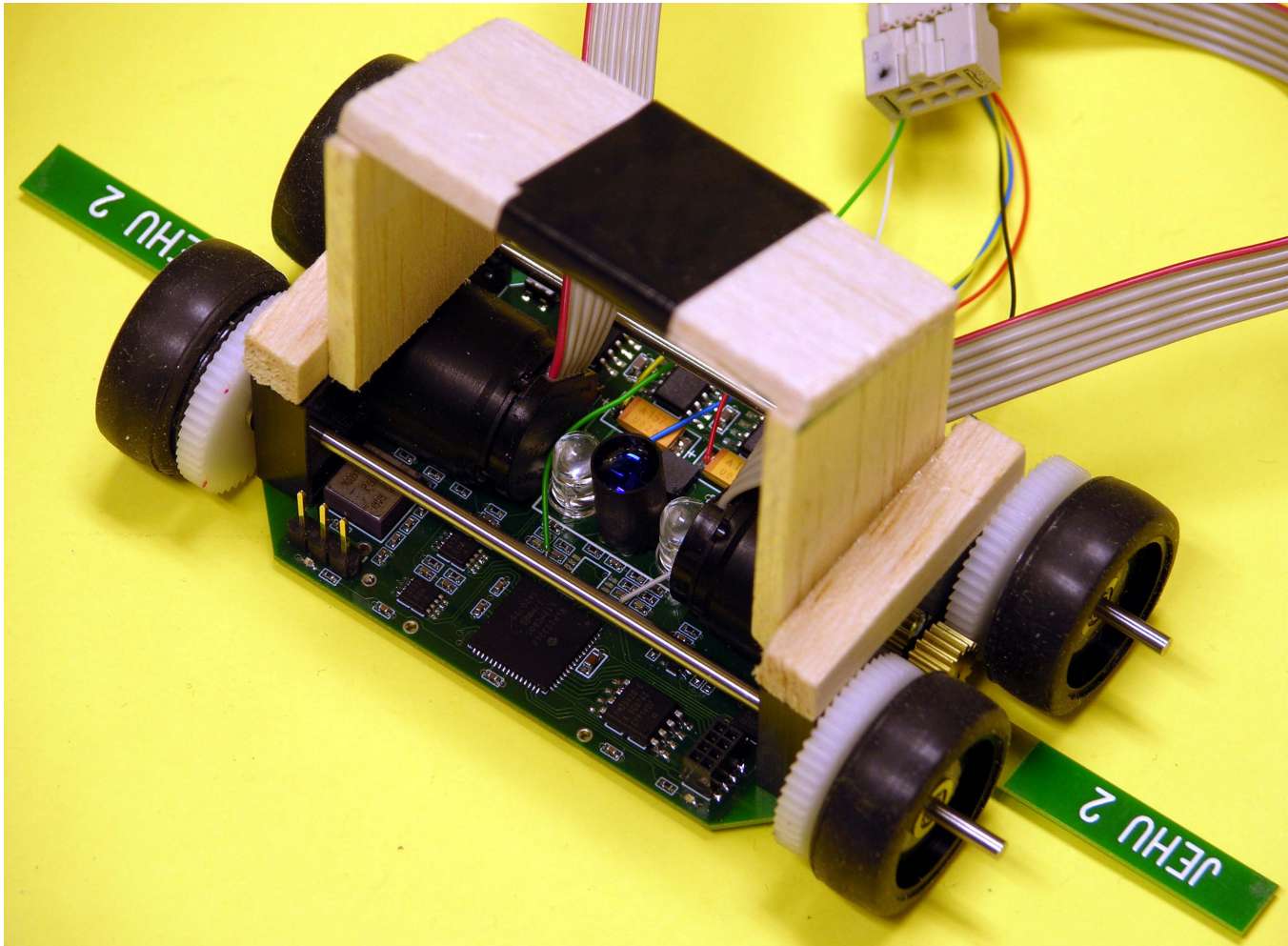


Hardware

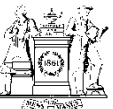
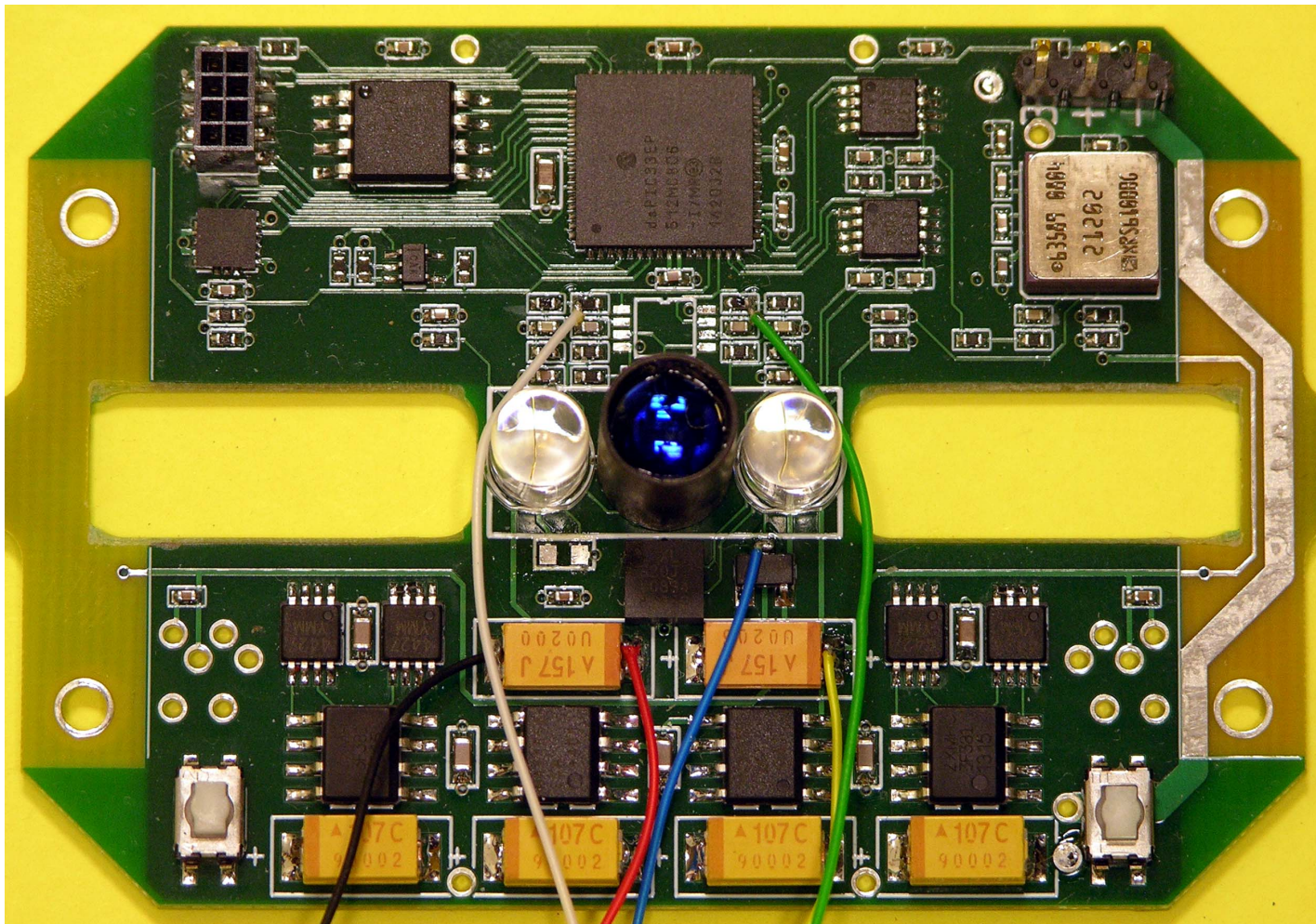
- PSD sensor with IR headlight
- DC motors with 512-line encoders
- Sensor for turn marker
- Sensor for Start/End marker
- 2-axis accelerometer
- Rate gyro
- dsPIC processor
- 32k byte serial NV RAM



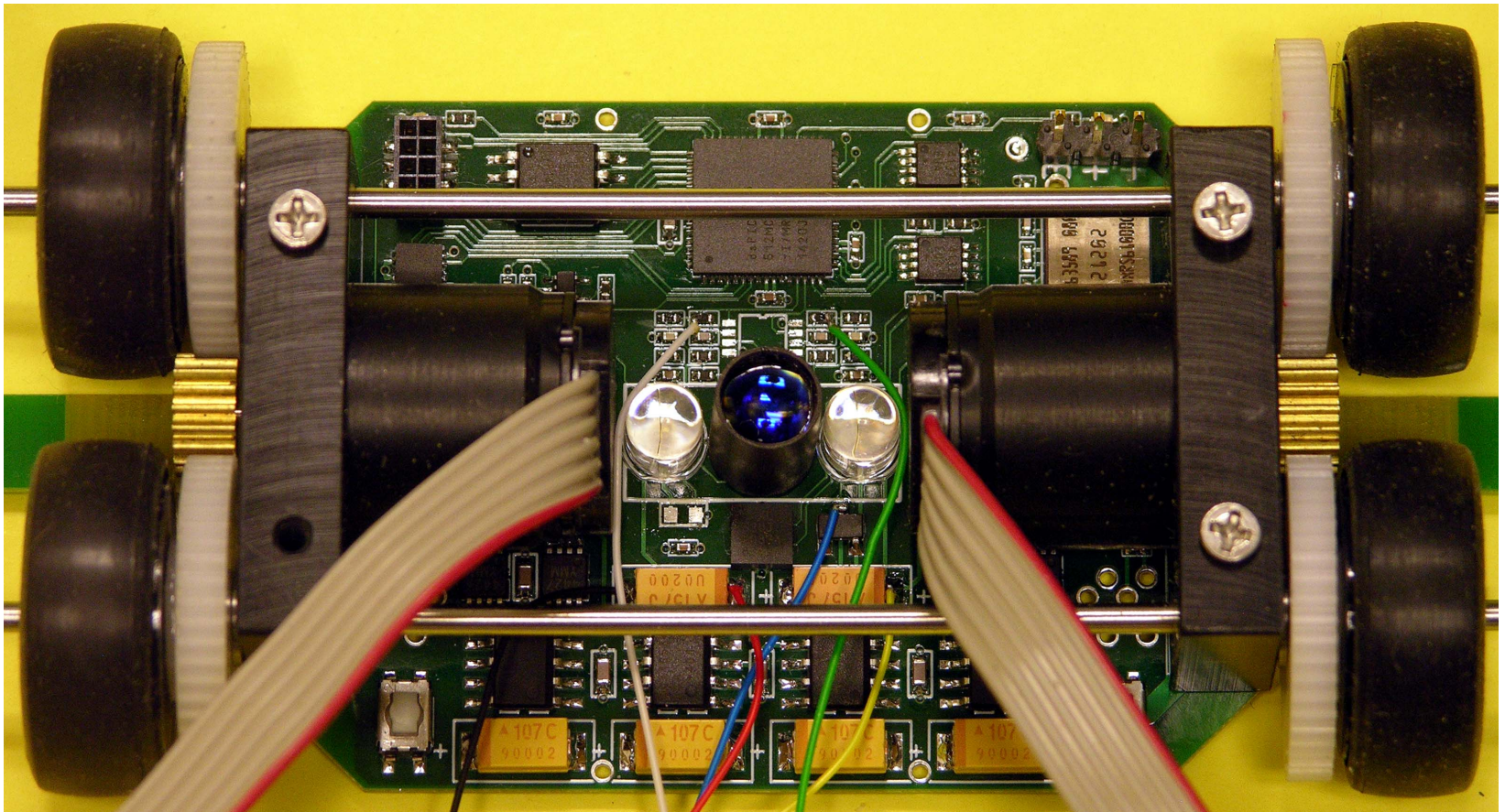
Jehu 2



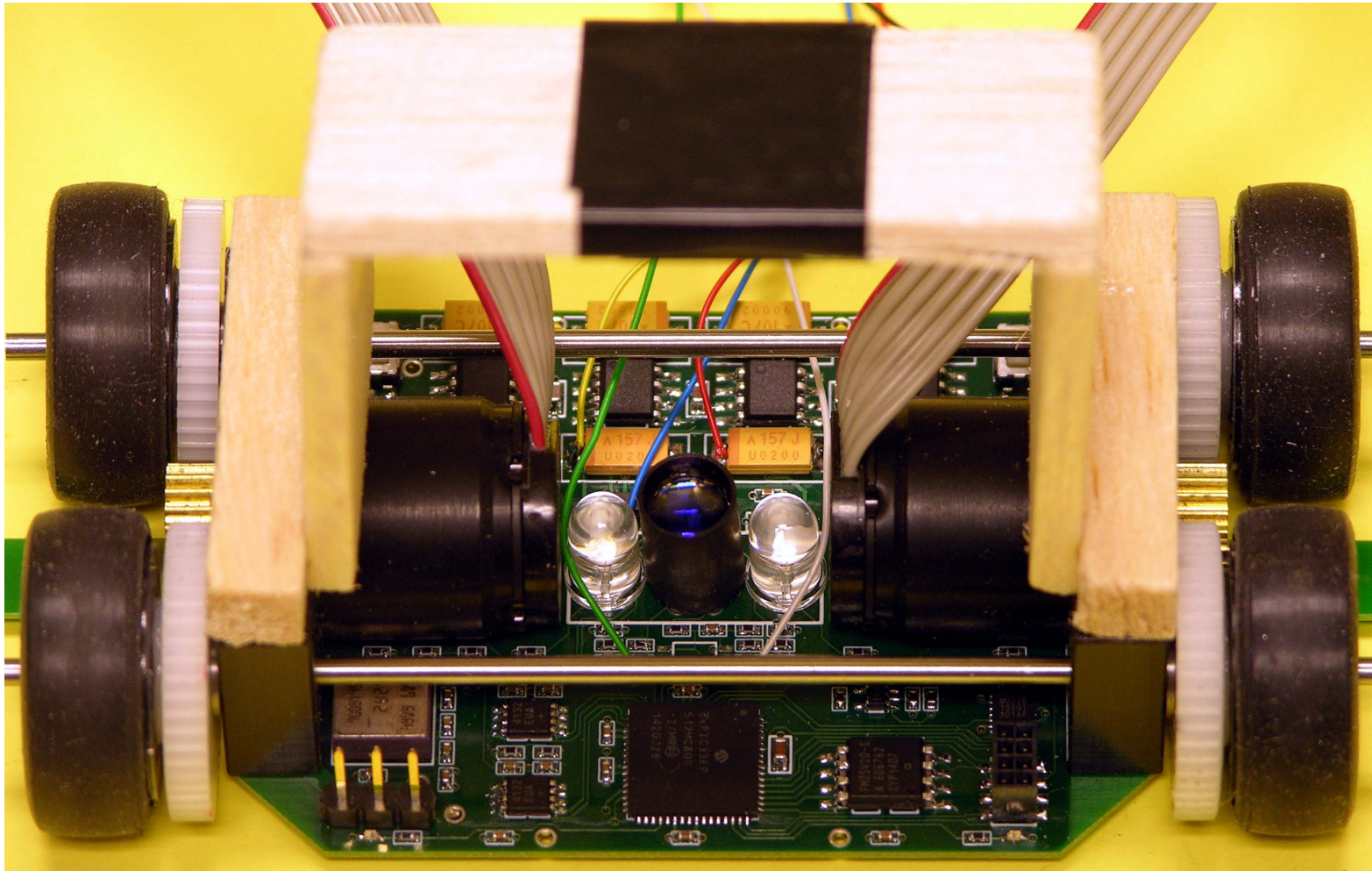
Jehu 2 PCB



Jehu 2 Chassis

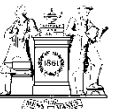


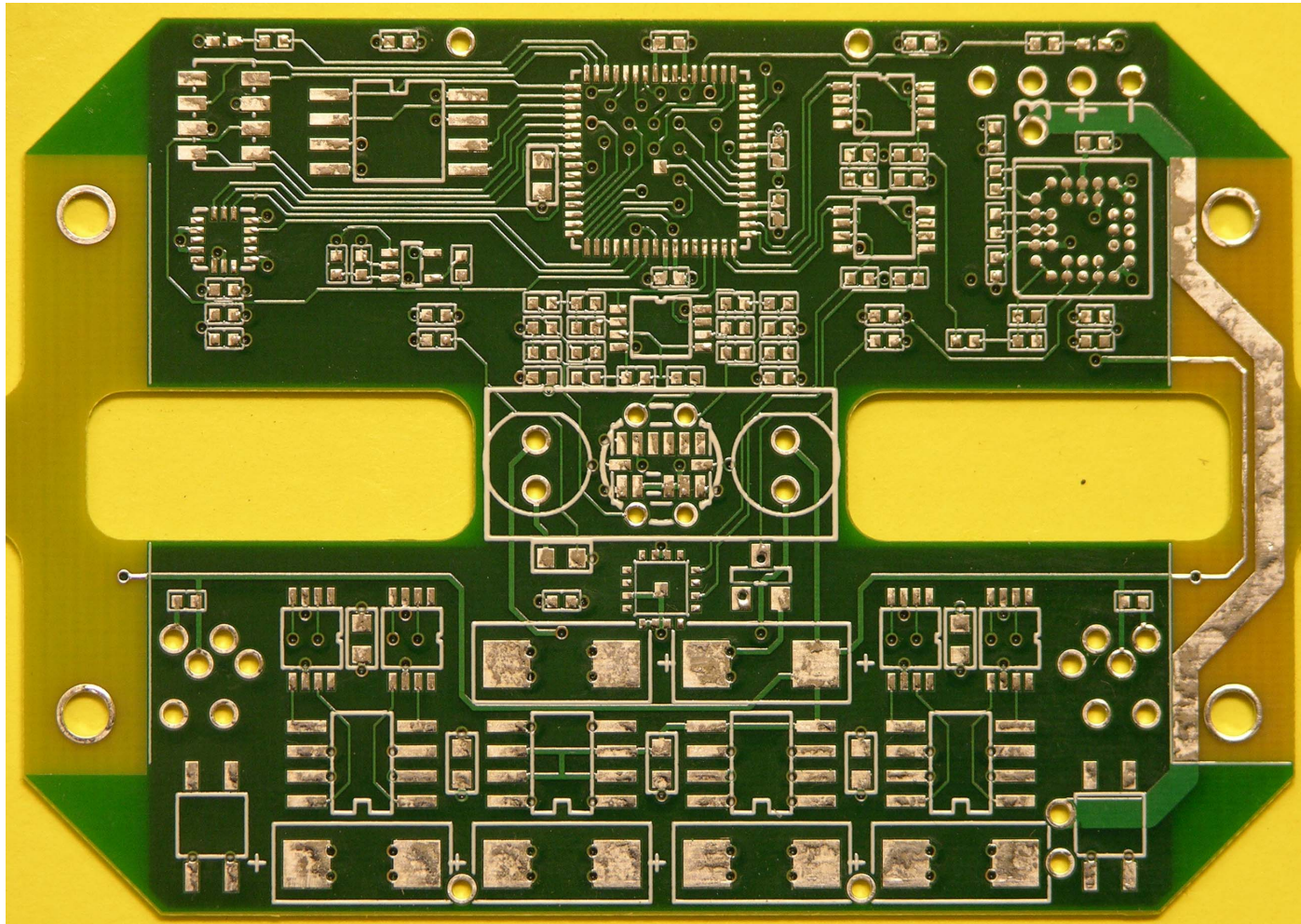
Jehu 2 Mirror Mount



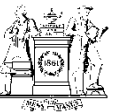
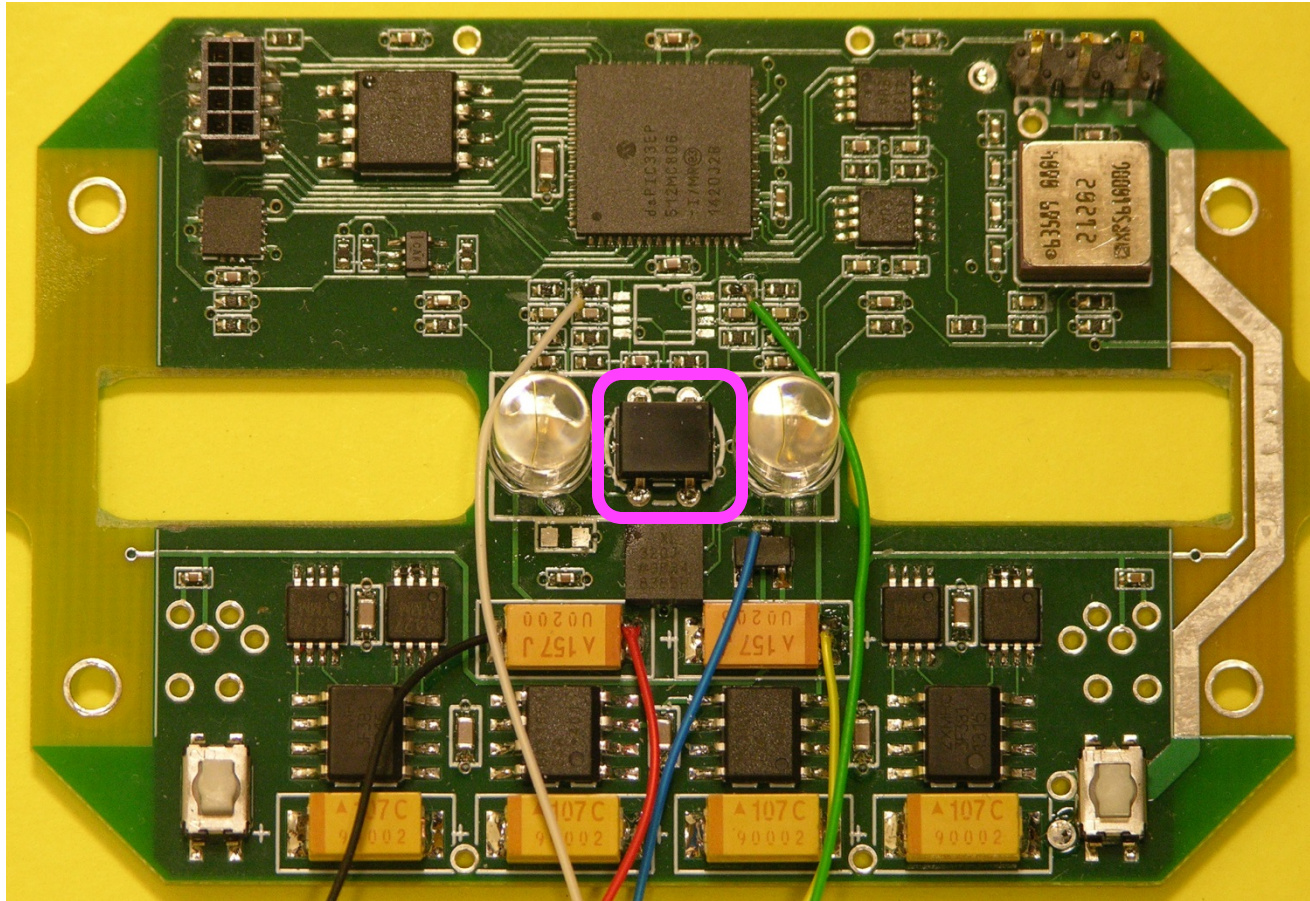
Inertial Sensors

- ADXL320 – 2 axis analog accelerometer
- ADXRS620 – 1 axis analog gyroscope
- ADXL345 – 3 axis digital accelerometer
- MAX21003 – 2 axis digital gyroscope

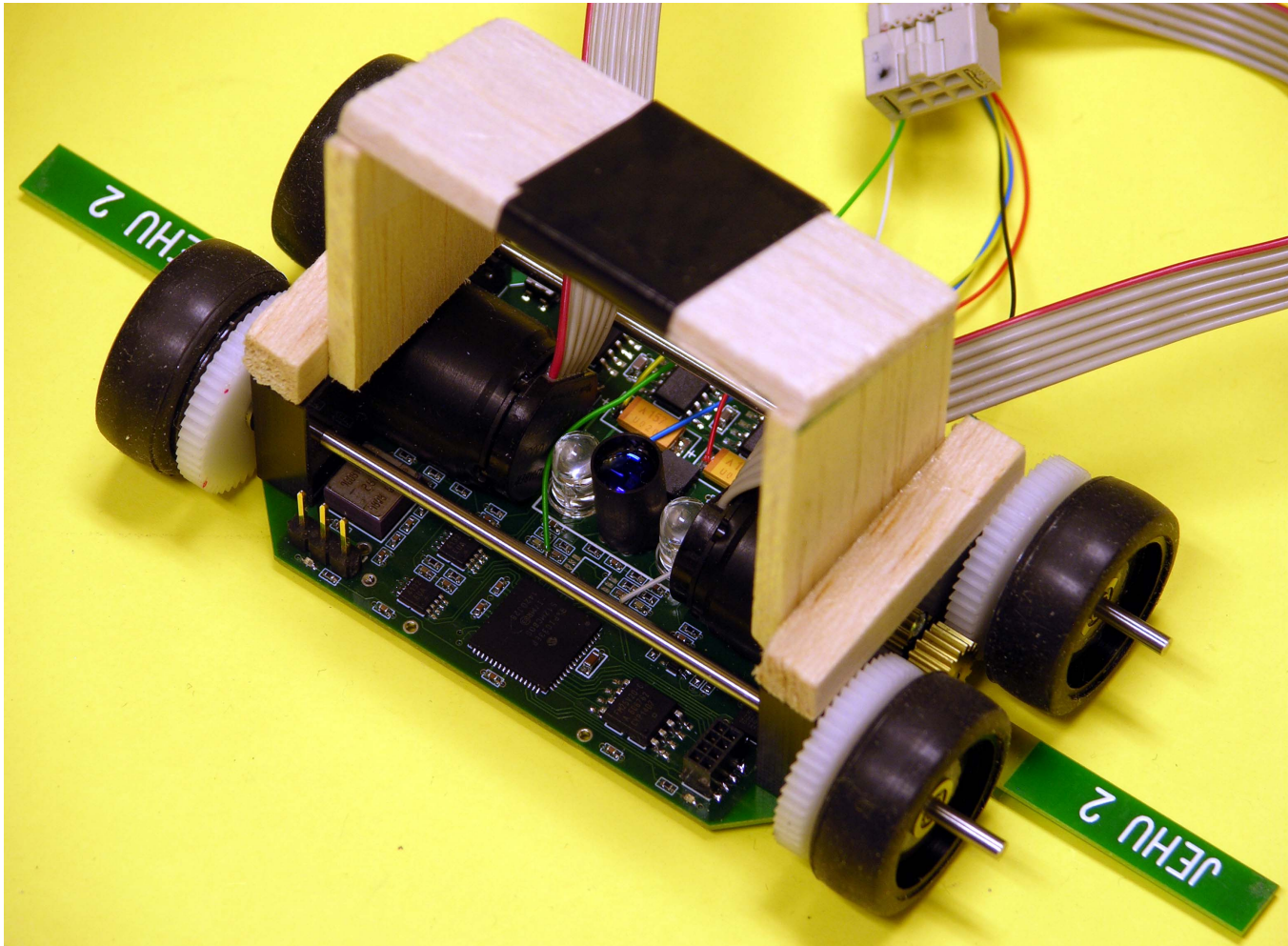




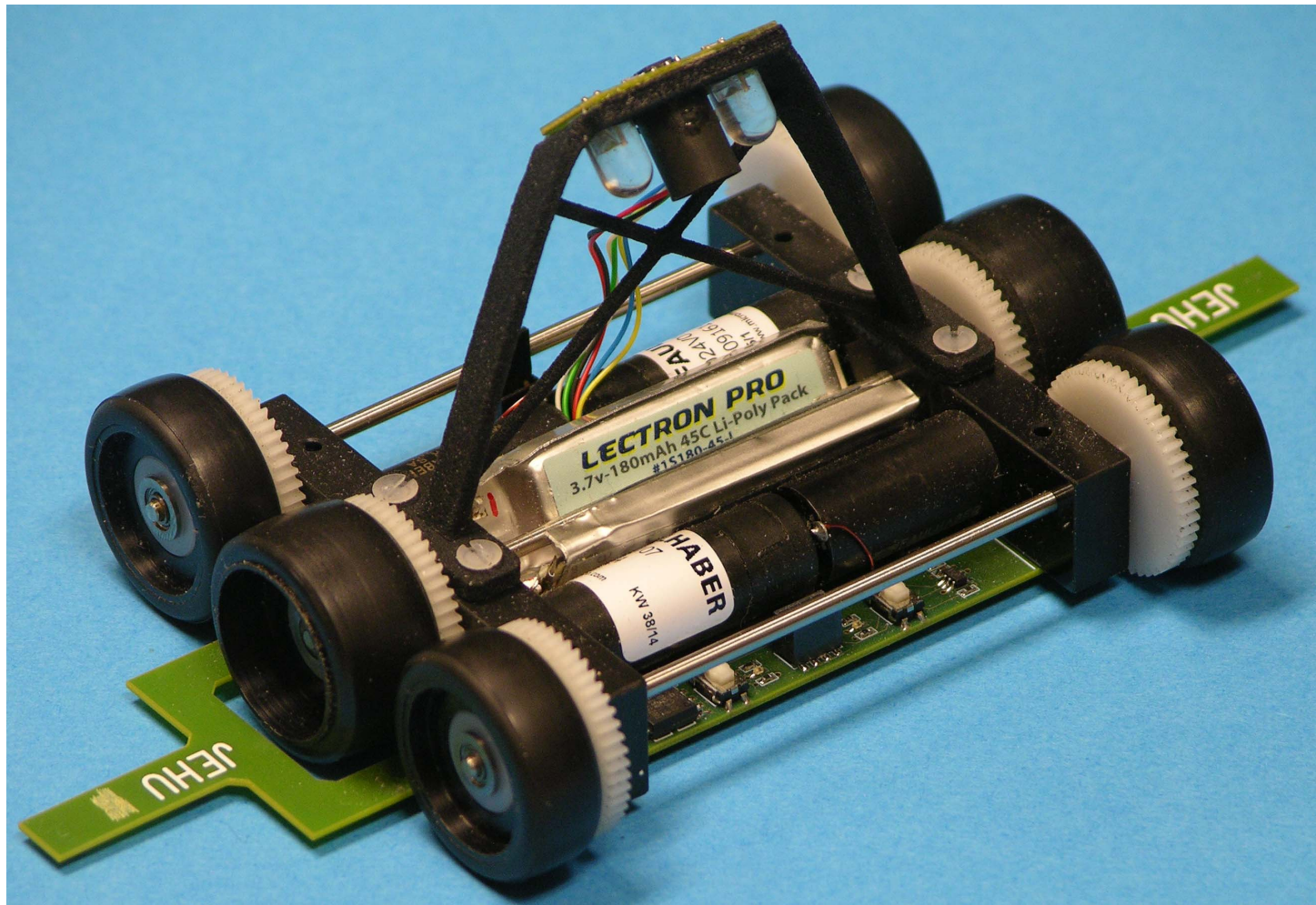
PSD Sensor mounted over 3-axis accelerometer



Jehu 2

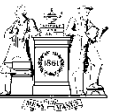


Front Corner View

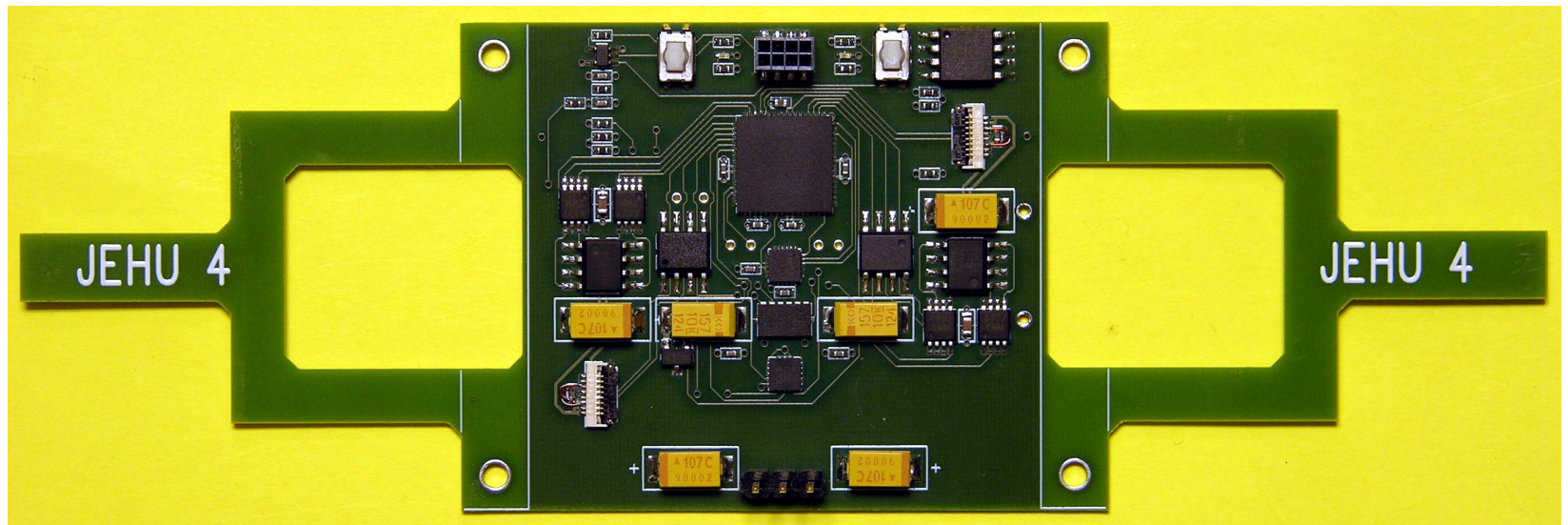


Drive Components

- 6 x drive wheels
- 4 x Faulhaber 1024 motors
- 2 x PA2 -100 encoders

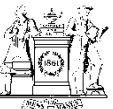


Jehu 3 PCB

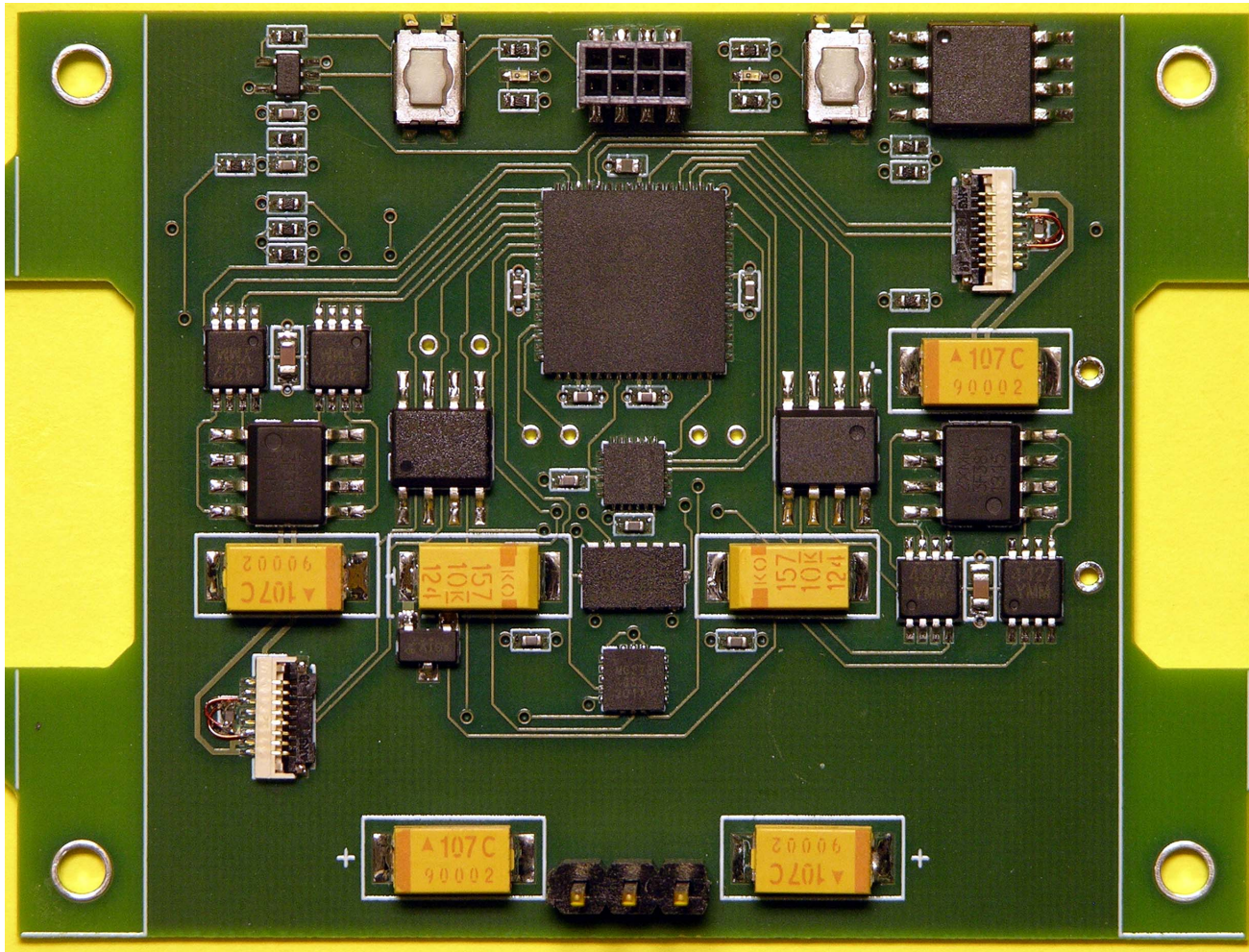


Inertial Sensors

- MPU-6500 3-Axis Gyroscope and 3-Axis Accelerometer
- MAX21003 Dual-Axis Gyroscope
- ADXL345 3-Axis Accelerometer

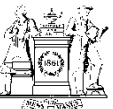


Jehu 3 PCB

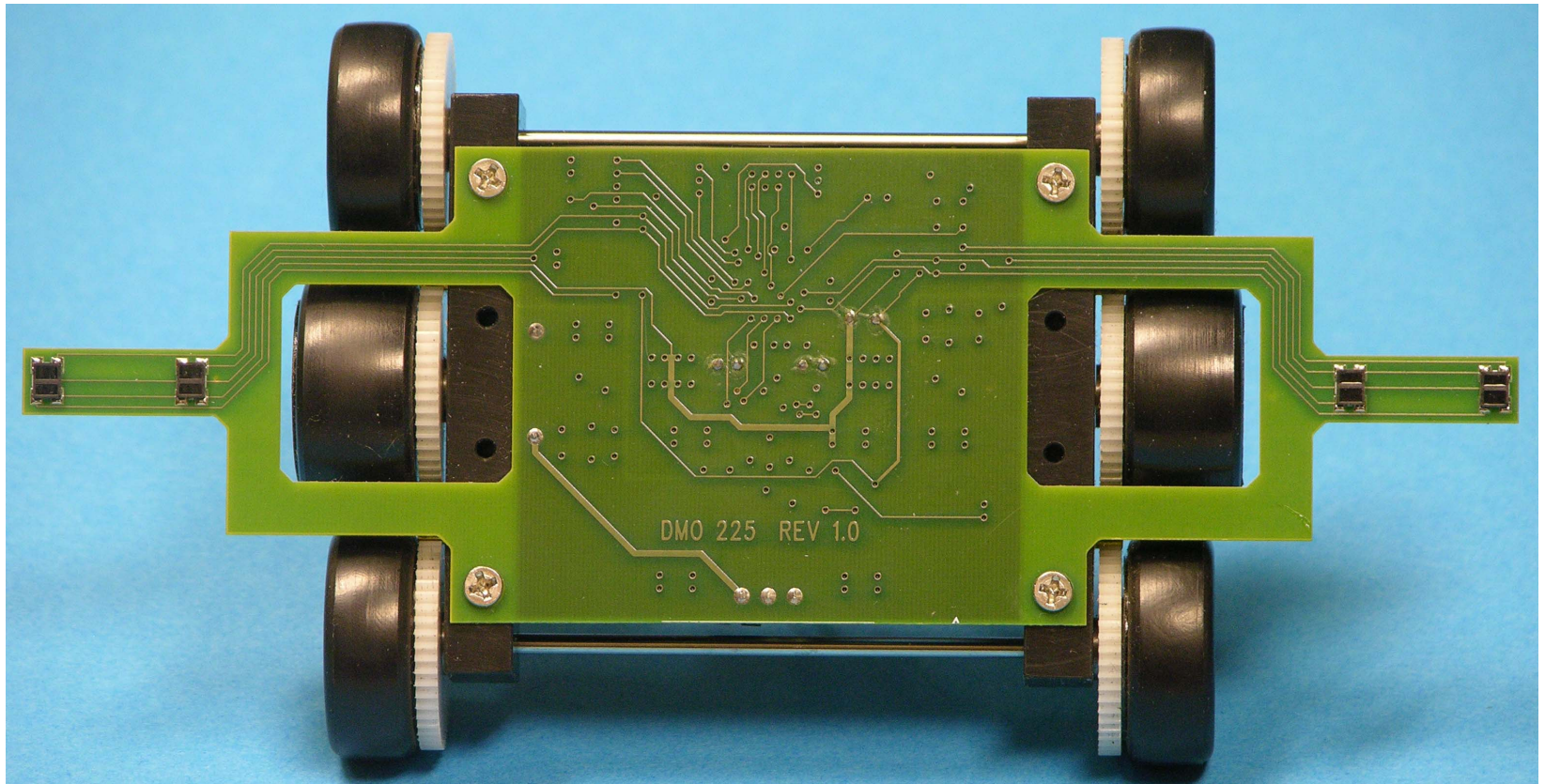


Configuration Experiment

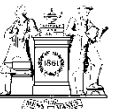
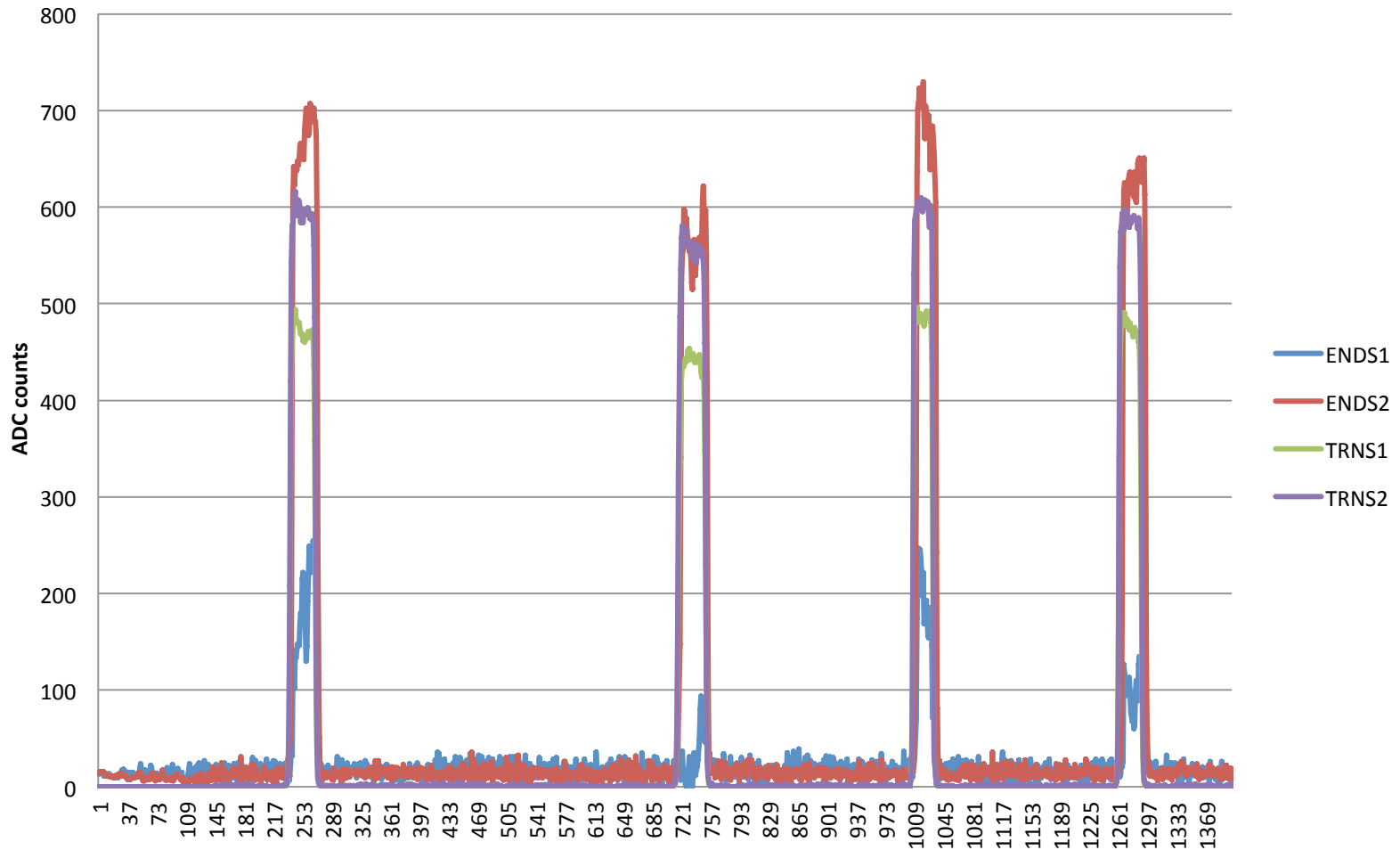
- Removed tires from middle wheels
- Determined maximum performance on home track with 4 wheels
- Placed wide tires on middle wheels – worked worse
- Placed narrow tires on middle wheels – worked worse



Bottom View



Marker Sensor Response for Jehu 3 with 4 Tires



Inertial Sensors

Part	Axis	Function	Interface	Jehu	Jehu 2	Jehu 3
ADXL320	2	accelerometer	analog	X	X	
ADXRS620	1	gyroscope	analog	X	X	
ADXL345	3	accelerometer	digital		X	X
MAX21003	2	gyroscope	digital		X	X
MPU-6500	3	accelerometer & gyroscope	digital			X



All Japan Contest 2015

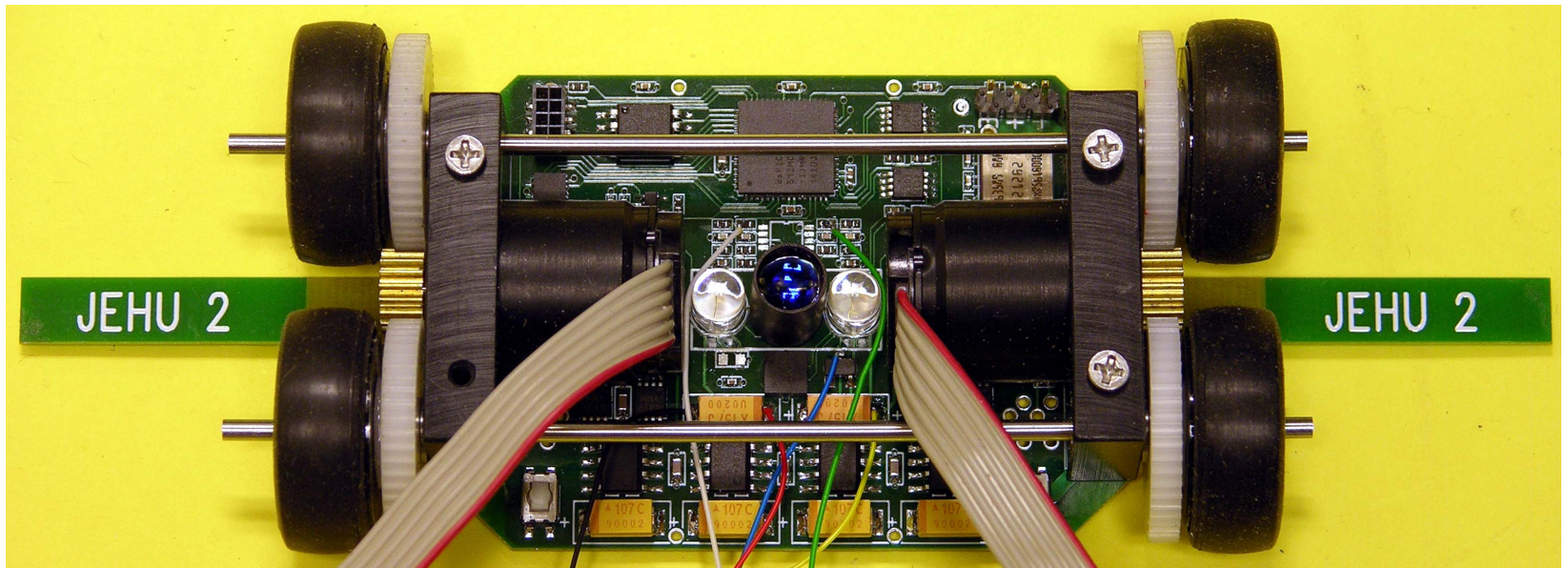


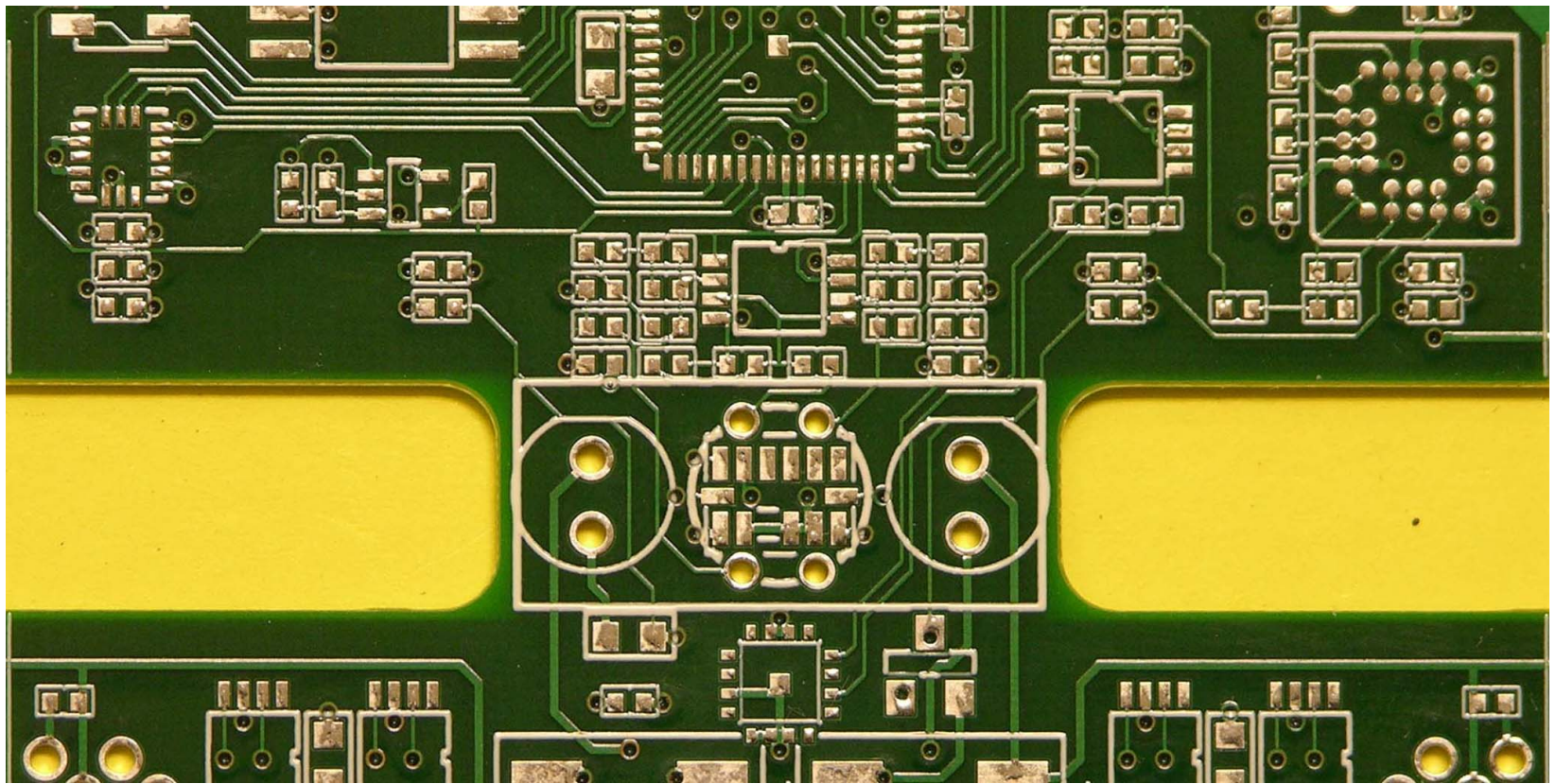
Tracer



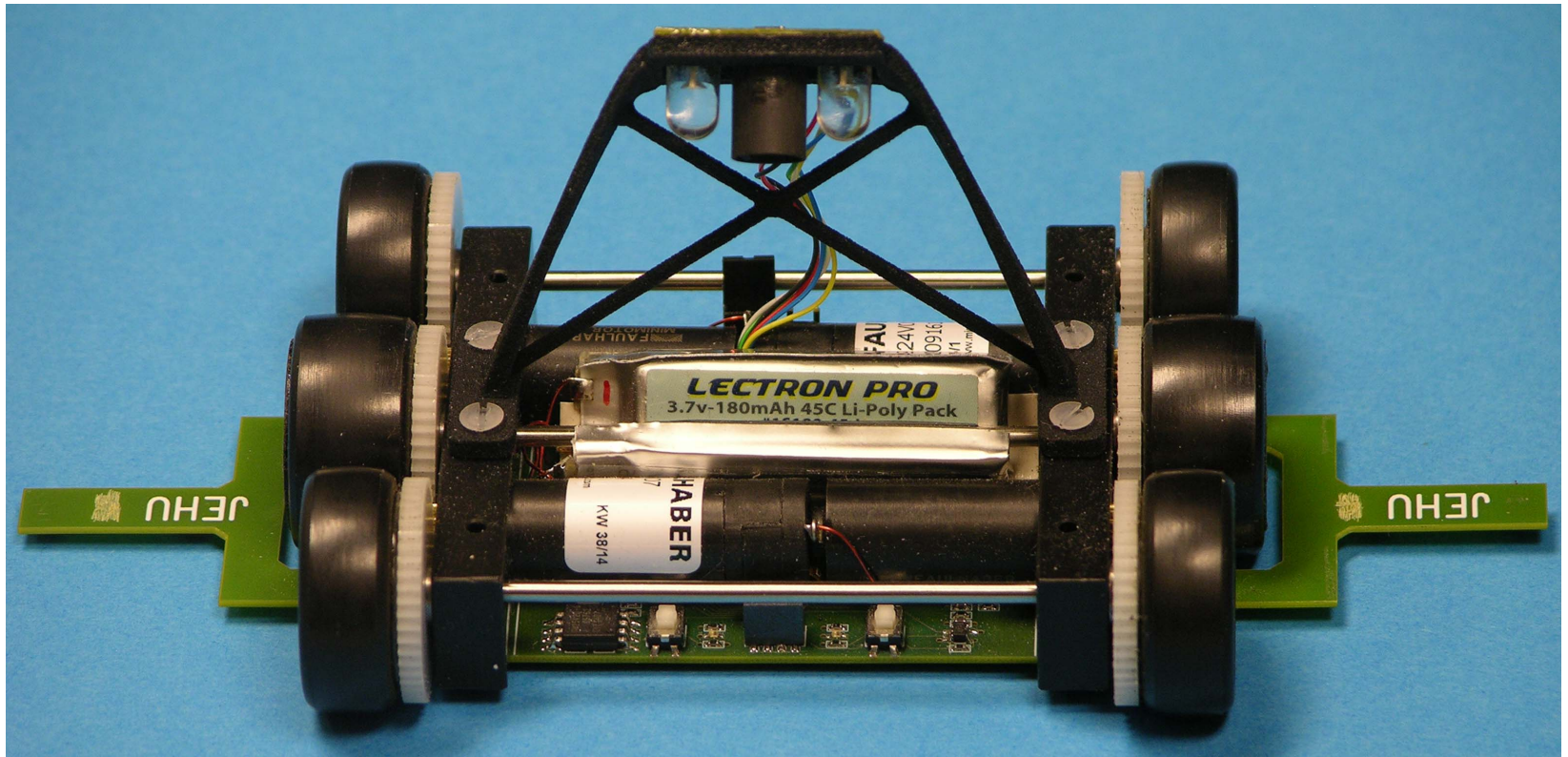


Jehu 2 Chassis





Front View



Rear Corner View

