

SPARKY

OPTICS & ROBOTICS EDUCATIONAL OUTREACH TOOLS



STEM Educational Outreach Tool

- ❖ Combines Optics, Imaging & Robotics
- ❖ Instantly attracts students attention
- ❖ Educates & Entertains students to keep them interested in learning more.
- ❖ Allows students to explore science, technology, engineering & math, with an artistic flare.
- ❖ Available for use by students of all ages
- ❖ Excellent for career pathways exploration events

"Sparky" is a new robot: designed and built by Cory Hague, an Irvine Valley College Photonics Technology student.

World class optics & robotics systems

Based on a commercially available 'motorized wheelchair', "Sparky" is powered by 2x 200 watt motors. Four separate computer systems work together to provide video processing, communications and managing relays, sensors and servo-actuators for motion control.

Multiple imaging systems

Sparky includes seven (7) separate video imaging systems, each with different functions and capabilities. Real-time data display is available at any time for any one of the three (3) main cameras. All cameras have IR LEDs for illumination enhancement and mechanical in/out placement of IR filters.

Laser Gatlin Gun

A six (6) barrel laser Gatlin gun that emits 'eye-safe' violet (405 nm) laser light as a special effect. The inside of each barrel is also illuminated with programmable RGB LEDs for additional effect.

OptoBoticssm

Specifications - "Sparky"

Mechanical			
Main Motors (2x)	200 Watts		
Actuators (6x)	Linear	125 lbs force	2x Shoulders, elbows, grippers
Mobility Systems			
Linux computer	Motherboard	Video Processing	
2x Arduino Mega	Communications	Coding-decoding	Protocols, RF Signals
Arduino Mega	Relays, Sensors	Capacitive Sensors	PWM Drivers & Servos
Wired & Wireless Systems			
Bluetooth			
2x Antennas	RF communications	Video 1.2 GHz	
Xbox 360	controller		
Data Storage	On-Board	40 GB Solid State HD	
Camera Systems			
3x Mast Mounted	All Vis / IR	One with diffraction	Grating for spectroscopy
One rear mounted	Two Side mounted	One mounted on the	Gripper w/ laser dot to locate
Laser Gatlin Gun			
6x Barrels	405 nm Laser Diodes	RGB LEDs	Wireless EM Coil for Power
Hazard Lights	On arm for safety	Turn on when laser	is activated
Lighting Systems			
Dual 24 V Head	Lights	Front Mounted	
Under Glow	LED based system	Bottom Mounted	
Sound System			
MP3 Based	On-board mic	Special Effects	Remote triggers



We are seeking monetary donations so we can donate Sparky to Vital Link of Orange County for their Career Exploration Events at local middle and high schools.

When we reach our fundraising goal, we will transfer ownership of Sparky to Vital Link and build the next system for the same purpose with another non-profit educational outreach organization.

On-Line Donations are accepted at: www.optobotics.com & <http://oisc.net>

Or contact us that phone number or email address below.

The OISC is proud to be a Project of [Open Projects and Apps](http://www.openprojectsandapps.com) a 501 (c) (3) non-profit corporation in the State of California. Please visit our websites for more information.



© Optics Institute of Southern California
14271 Jeffrey Rd., Suite 240, Irvine, CA 92620
949-636-6170 | donn@oisc.net | www.optobotics.com