

# Dhruv Sharma

Mechatronics Engineering  
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## SKILLS SUMMARY

- Proficient in object oriented programming (C++) including data structures & algorithms.
- Sound knowledge of IP networking, file sharing, network design & protocols.
- Skilled in AutoCAD and SolidWorks
- Practical knowledge of RobotC through programming of Lego Robots
- Experience with programming of MSP430 microcontroller
- Adept in Microsoft Word, PowerPoint, and Excel
- Leadership qualities-Lead groups in various high school events and team lead for term project,
- Innovative thinker with remarkable problem solving and analytical skills validated by fair performance in Olympiads

## WORK/VOLUNTEER EXPERIENCE

### Member, University of Waterloo Alternate Fuels Team (UWAFI)

Sept 2013- Present

- Participant in refining of eco-car designed by the UWAFI team.
- Contribute actively by suggesting ways to improve power and efficiency.

### Member, University of Waterloo Rocketry Team

Sept 2013- Present

- Gained extensive knowledge about vehicle aerodynamics, engine and payload design
- Learning programming of the microcontroller (BeagleBone and ATmega) used in a Rocket

### Team Lead, Robotics Workshop, Indian Institute of Technology Mumbai

October 2012

- Attended a two day zonal Robotics workshop organized by IIT Mumbai
- Created a basic foundation for constructing a wireless robot
- Won the zonal competition and participated at the national level

### Space School Graduate, Johnson Space Center, NASA, USA

May 2009

- Attended Space School - a week long engineering challenge at NASA
- Performed several activities including building a mars rover, Orbital lofting(lofting into space), rocket launching and space shuttle manoeuvring
- Interacted with NASA engineers and scientists and gained knowledge about space exploration and practical application of science.

## LABS/PROJECTS

### Robot Design Project: Aimed at designing a Lego Robot- Lead a group of four students

- Designed a Lego Robot and programming it to perform sorting of objects and creating a structure
- Involving use of touch, ultrasonic, colour sensors and encoders to perform the desired tasks

### Fuel Cell Design Project: Aimed at designing a car powered by hydrogen.

- Applied concepts of chemistry involving the use of hydrogen as a fuel in fuel cells and used for powering a car
- Programmed MSP430 microcontroller to control the fuel cell car

### Engine Dissection Lab: Dissected and examined the parts of an engine

- Gained hands-on experience working on disassembly and re-assembly of an engine
- Calculated the torque produced by the engine and horsepower of the engine and analysed the result

## COURSES

### **CompTIA Network+:**

- Identified the basic network theory concepts, major types of network implementations(TCP/IP, LAN, WAN)
- Learnt about major issues and technologies in network security, securing systems on a network and troubleshooting of networking issues.
- Mastered all these concepts through labs by planning, designing and setting up a network and resolved various problems that arise as a part of it

### **Digital Computation:** Electronic digital computers, hardware and software organization

- Learnt programming using C++, implemented algorithms emphasising on the efficiency of the code
- Gained proficiency in Robot C for programming robots

### **Engineering Graphics:** Fundamentals of engineering drawing

- Developed skills in computer aided design, freehand sketching and interpretation of technical drawings
- Gained experience working with AutoCAD for creating 2D designs and SolidWorks for creating 3D designs

### **Mechatronics Engineering:** Integration of electronic and electrical engineering, computer technology and control engineering with mechanical engineering in the design, manufacture and maintenance of engineering products and processes.

- Mastered the elements of the design process, project planning and data presentation including measurements and errors
- Gained expertise in digital control logic as well as the working of sensors and actuators, Learnt the working and use of Oscilloscopes.

## EDUCATION

**Candidate for Bachelor of Honours Mechatronics Engineering,** Co-operative Program, University of Waterloo, Waterloo, ON, September 2013

**High School Diploma,** Spring Dale Senior School, Amritsar, India

- Completed high school with an overall grade of 96.2%, received a perfect score in Physics
- Bagged a perfect score in SAT Subject Tests(Physics, Maths level2 and Chemistry)

## AWARDS

- Grade 12 high school topper, Subject topper in Physics, Chemistry and Physical Education
- Bronze level in Duke of Edinburgh's Award(International Award for Young People)
- National Topper in grade 10 with a perfect GPA

## ACTIVITIES & INTERESTS

**Residence Ambassador,** Marketing Advisory Board, Housing and Residences, University of Waterloo **September 2013**

- Worked in a team to improve the residence experience for students
- Brainstormed various ideas and collected feedback from students in order to deal with various housing issues

**Organizer,** Awareness Campaign against African warlord Joseph Kony, Punjab, India

**April 2013**

- Lead a team of 6 self-motivated students to organize a campaign against Joseph Kony
- Managed and directed about 200 students who joined the campaign
- Marched in the city telling people about Joseph Kony and making them aware of his atrocious activities

**Other Activities:** Enjoy swimming, doing adventurous things, singing & playing musical keyboard.