



12/5/09 SATURDAY
AGENDA @ SANTA CLARA UNIVERSITY

- 8:30 a.m. – 9:00 a.m. Sign in to Pre-Registration List; Register for any open slots
- 9:00 a.m. – 9:15 a.m. Introductions & Kickoff
- 9:15 a.m. – 10:30 a.m. WORKSHOP #1**
- 10:30 a.m. – 10:45 a.m. Break
- 10:45 a.m. – 12:00 p.m. WORKSHOP #2**
- 12:00 p.m. – 1:00 p.m. Lunch
- 1:00 p.m. – 2:15 p.m. WORKSHOP #3**
- 2:15 p.m. – 2:30 p.m. Break
- 2:30 p.m. – 3:45 p.m. WORKSHOP #4**
- 3:45 p.m. – 4:00 p.m. Wrap up

\$5 covers WHOLE DAY & Pizza; thanks to PTC, the 2009 Workshop Lunch Sponsor

About WRRF: The Western Region Robotics Forum (WRRF) is a non-profit organization dedicated to promoting the educational use of robotics and providing support for the Bay Area FIRST robotics teams. WRRF puts on a series of pre-season workshops for FIRST teams covering a wide range of subjects, including: team management, electronics, computer animation, drive train design, and software development. WRRF organizes the California Robot Games off-season competition. For more information, contact Ceal Craig, Ceal@WRRF.org or WRRF.Info@WRRF.org

About FIRST Robotics: Founded in 1989 by accomplished inventor Dean Kamen, FIRST (For Inspiration and Recognition of Science and Technology) motivates young people to pursue opportunities in science, technology, engineering, and math. More than 1000 teams of high school students world-wide compete annually in their flagship competition, the FRC – First Robotics Competitions. For more information see the FIRST website at <http://www.usfirst.org/>.

WRRF BOARD OF DIRECTORS

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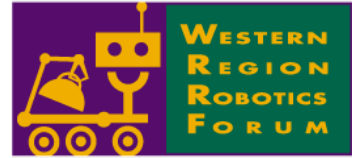
Alvin Cheng, Secretary

BOD Members: Deborah Epperson, Mark Epperson, Dr. Chris Kitts

THANKS TO OUR SPONSORS!

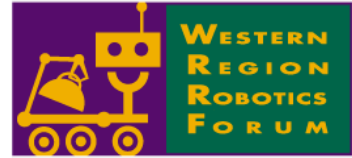
Santa Clara University, College of Engineering

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WORKSHOPS & PRESENTATIONS

- **2010 FRC Software (Beta Team)**—software and hardware demonstration; review of new FRC software.
Presenters: FRC Team 115, Monta Vista High School
Intended Audience: all
- **Are you a rookie? Learn what every rookie team should know**—Learn about the FIRST robot schedule. Get TIPS on key success factors. A rookie team will share what they learned in their rookie year
Presenter: FRC Team 3013, Vallejo High School
Intended Audience: Rookie (first time involved with FRC) students, mentors, parents
- **Basic Feedback Control**—Velocity and position control; proportional feedback; stability; methods to easily adjust gain; speed measurement; speed controller characteristics; adjusting for nonlinearities
Presenter: David Giandomenico, Lynbrook HS Robotics, FIRST Team 846 Mentor
Intended Audience: beginners, students & mentors
- **Computer Aided Design & PTC**—ProE/Wildfire Overview. PTC FIRST webinar video (~60min) presenting an overview of ProE/Wildfire as it applies to FIRST Robotics Development followed by an open discussion of the program and resources available from PTC. View the method of creating a robot assembly from KOP and designing Robot parts.
Presenters: Team #2813 Prospect High School *Gear Heads:* Will Beedle & Mack Riccardi
Intended Audience: all
- **Electronics**—this workshop covers everything from the ground up. Very basic introduction to the terminology of volts and amps, wire gauges, etc. Beginning theories of electricity, such as Ohm's Law shared. Learn about all the power distribution and electronic components in the FIRST kit of parts as well as common mistakes and pitfalls for new teams and new students.
Presenters: Mike Schmit, Team 1351 FRC Mentor & WRRF BOD VP
Intended Audience: beginners
- **DC Motors (advanced)**—Selecting Motor and Gear Ratios for a Winch Application. Topics: torque & force; motor torque vs speed; input vs output power; gear ratio selection. Time permitting advanced subject: PWM control -- no load speed vs duty cycle; speed regulation; PWM current & voltage. **NOTE: This afternoon workshop spans two slots: Workshop 3 & 4.**
Presenter: David Giandomenico, Lynbrook HS Robotics, FIRST Team 846 Mentor
Intended Audience: **advanced** students & mentors
- **Introduction to Robot Subsystems**—an overview of the major parts of a FIRST competition robot for rookie members, covering the following subsystems: Electrical - battery & power distribution, speed controllers, relays; Sensors & Electronics - encoders, proximity sensors, controller, overview of driver station; Drive train - wheel types, base configurations (wide vs. long); Pneumatics - live demonstrations
Presenter: David Liu, Abhinav Sinha, Haochuan Ni, Yuya Bessho
Intended Audience: FIRST rookies (students, parents, mentors) wanting to get an overview of how the robot works



- **Pneumatic Power**— 2008 Pneumatics from FRC Kickoff Workshops by Ken Stafford of WPI. Video and slide overview of how pneumatics work plus why and how to use them in your robot.
Presenter: Rick Riccardi, Team #2813 Mentor
Intended Audience: beginners
 - **Robot Control System Overview**—An overview of the Robot Control System based on the National Instruments CompactRIO. New control system features for the 2010 FRC season will also be presented.
Presenter: Laura Rhodes, Mentor, Team #100, Woodside/Carlmont Robotics
Intended Audience: students, mentors, parents, with some programming or electronics experience
 - **Robot Design Theory**—*Robot Design Theory* video (24min) developed by Zan Hecht for a 2008 FIRST rookie workshop followed by a facilitated discussion of the concepts for 2010.
Presenter: Team #2813 Prospect High School *Gear Heads*: Mentor- Joe Tyburski
Intended Audience: students, beginners, mentors, parents
 - **Robot Physics**—Quantities of motion, forces (some focus on friction and gravity), projectile motion, torques, some basics about motors, the concept of center mass, and the concept of a moment of inertia
Presenter: Dr. Eugene Brooks, FRC mentor & WRRF BOD President
Intended Audience: Beginners
 - **Societal Influences on STEM Graduates:** Is the state of innovation in a state of collapse in the U.S.? Have major happenings in history influenced prior STEM graduates? What does this mean for robotics teams and the future? Next step in an exploration of how robotics programs influence young people's career decisions.
Presenter: Ceal Craig, prior FRC mentor, Engineering Director, and PhD Student
Intended Audience: Mentors, Teachers, & Parents; interested students
 - **Teen Career Influences & STEM**—Science, Technology, Engineering, & Mathematics—or can FIRST programs help improve availability of STEM graduates in US? Teams can use this presentation, first made in April 2009 at the FIRST Robotics Conference in Atlanta GA, with sponsors.
Presenter: Ceal Craig, prior FRC mentor, Engineering Director, and PhD Student
Intended Audience: Mentors, Teachers, & Parents; interested students
 - **Using LabVIEW with FRC controller**—Tips on using LabVIEW to develop robot software for the cRIO-based FRC Control System: configuring the various Control System components; creating an FRC cRIO Robot Project in LabVIEW; using the WPI Robotics Library VIs; deploying code to the cRIO; debugging your robot code
Presenter: Laura Rhodes, Mentor, Team #100, Woodside/Carlmont Robotics
Intended Audience: Students & mentors planning to program the robot using LabVIEW
 - **Using C++ with FRC controller**—Tips on using C++ to develop robot software for the cRIO-based FRC Control System
Presenter: Gary Koerzendorfer, Mentor, Team #668, Pioneer High School
Intended Audience: Students & mentors planning to program the robot using C++. Previous experience using C, C++ or Java recommended.
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