

OUTREACH EVENT: “Robots Helping People”

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When	What	Supplies	Responsible party
10:00 am – 10:15 am	Pack equipment into cars.	<ul style="list-style-type: none"> • Demo materials • Lab t-shirts (light gray) • Camera(s) 	<ul style="list-style-type: none"> • Lab members, Veronica
10:15 am – 10:30 am	Drive everyone to Rover Elementary.		
10:30 am – 11:00 am	<ul style="list-style-type: none"> • Sign in at front office. • Borrow a cart. • Set up demonstrations in cafeteria (to be moved to classrooms just prior to 11 am). 		<ul style="list-style-type: none"> • Veronica
11:00 am – 11:30 am	<ul style="list-style-type: none"> • Introductions (<i>all</i>) • Videos Veronica • <u>Demo</u>: Indoor RC quadcopter flight (Lab member #1) 	<ul style="list-style-type: none"> • Computer with .ppt and videos • RC quadcopter 	<ul style="list-style-type: none"> • Veronica • Lab member #1
11:30 am – 11:45 am (and repeating every 15 min. until 12:30 pm)	Station #1: Robot hands (Lab member #1) <ol style="list-style-type: none"> 1. <u>Prompt</u>: “Where are the muscles that move your fingers? How do they transmit their forces?” 2. <u>Hands-on</u>: Pass around plastic tendon-driven hand model 3. <u>Demo</u>: Show Shadow Hand in case (<i>for viewing only</i>) 4. <u>Demo</u>: Show BairClaw in action (<i>for viewing only</i>) 	<ul style="list-style-type: none"> • Caution tape • BairClaw with computer and peripherals • Shadow Hand • Wooden hand model • Plastic tendon-driven hand model 	<ul style="list-style-type: none"> • Lab member #1
11:30 am – 11:45 am (and repeating every 15 min. until 12:30 pm)	Station #2: Tactile sensing (Lab member #2) <ol style="list-style-type: none"> 1. <u>Hands-on</u>: Ask students to reach into boxes and, without looking, guess which ball is shaped like a golf ball, tennis ball, basketball, and Earth. Can have students raise their hands to vote for the item matched with each letter “A”, “B”, “C”, and “D.” 2. <u>Prompt</u>: “How did you identify the objects without looking?” 3. <u>Hands-on</u>: Take two volunteers and have each one put on a glove. Mix up the balls in the boxes and ask 	<ul style="list-style-type: none"> • Touch-but-don’t-look boxes (with hidden objects) • Kid-sized gloves • BioTac tactile sensor with peripherals • Laptop for running LabVIEW GUI • Tactile sensor skin prototypes in a closed petri dish 	<ul style="list-style-type: none"> • Veronica, Lab member #2

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	<p>them to identify the objects with their gloved hands.</p> <ol style="list-style-type: none"> <u>Prompt</u>: “Why did they have a hard time identifying the balls this time?” <u>Hands-on</u>: Pass around tactile sensor skin prototypes <u>Demo</u>: Describe and show off the BioTac sensor <i>(for viewing only unless the students are well-behaved, in which case they may squeeze the BioTac held by Lab member #2)</i> 		
<p>11:30 am – 11:45 am</p> <p>(and repeating every 15 min. until 12:30 pm)</p>	<p>Station #3: Make-a-finger (Lab member #3)</p> <ol style="list-style-type: none"> <u>Prompt</u>: “Where are the muscles that move your fingers? How do they transmit their forces?” <u>Hands-on</u>: Demonstrate the straw finger that the students will each make and show them how. <ol style="list-style-type: none"> Thread a ribbon through a straw. Tape the ribbon to the fingertip with the ribbon on the notched (flexion) side of the fingertip. Prime the straw by manually bending the straw at each of the joints. Move the finger by holding the base of the straw with one hand and pulling on the ribbon with the other hand. Think of fun and interesting things you can do with your artificial finger (e.g., say “come here” to someone, scratch your nose, knock over something lightweight, wrap the finger around something). 	<ul style="list-style-type: none"> Plastic skeleton hand model Demo straw fingers Pre-notched straws Ribbon Tape 	<ul style="list-style-type: none"> Veronica, Lab member #3
<p>11:30 am – 11:45 am</p> <p>(and repeating every 15 min. until 12:30 pm)</p>	<p>Station #4: Design, draw, and describe your own robot (Lab member #3)</p> <ul style="list-style-type: none"> <u>Hands-on</u>: Ask the students to design and draw their own robots. The robot can be inspired by something they’ve seen, something they would like to see, or something they would like a robot to help them 	<ul style="list-style-type: none"> Paper Writing implements 	<ul style="list-style-type: none"> Lab member #3

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	with in their own lives. After they've drawn their robots, ask the students to add captions to their pictures.		

Note: **Veronica** will initially be a floater until stations reach steady-state and then she'll settle in at whichever station needs the most help.