



California Science Center
CALIFORNIA STATE SCIENCE FAIR
2001 PROJECT SUMMARY

<p>Your Name (List all student names if multiple authors.) Michael D. Giusti</p>	<p>Science Fair Use Only</p>
<p>Project Title (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9) Robotic Maze Navigation with a Micro-Controller</p>	<p>J0612</p>
<p>Preferred Category (See page 5 for descriptions.) 6 - Electricity & Electronics</p>	<p>Division J Junior (6-8) J Senior (9-12)</p>
<p>Abstract (Include Objective, Methods, Results, Conclusion. See samples on page 14.) Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.</p> <p>Objective: Which of the following sensor configurations with the appropriate program will allow a robot featuring a BoE (board of education) with a basic stamp 2 microcontroller to navigate it's way through a maze with the least amount of time?</p> <p>Sensor configurations: 1.○An IRPD (infra-red proximity detector) vision board. 2.○A whisker kit consisting of 2 touch sensors.</p> <p>Procedure: (Meathods) 1. Purchase the BoE (board of education) robot. 2. Purchase whiskers kit. 3. Purchase the IRPD (infra-red proximity detector) vision board. 4. Build a maze for experimentation. 5. Use BoE robot manual to build BoE robot. 6. Put basic stamp 2 microcontroller onto BoE robot. 7. Install whiskers kit onto BoE robot. 8. Write a program for maze navigation in pbasic that uses the Whiskers kit. 9. Download the program to the BoE robot. 10. Run the BoE robot with the Whiskers through the maze. 11. Record results. 12. Solder the IRPD board together. 13. Write a program for maze navigation in pbasic which uses the IRPD vision board. 14.○Download the program to the BoE robot. 15.○Run the BoE robot with the IRPD vision board through the maze. 16.○Record results. 17.○Graph results. 18.○Write report. 19.○Make backboard. 20.○Send in SCVSEFA application.</p> <p>Conclution: I conclude that my Hypothesis was incorrect because the IRPD required a front sensor that would be less sensitive than the IRPD's left sensor. Also the right sensor was too sensitive. When it came to a right turn, the infrared beam would still bounce off of a wall farther on and the receiver would recognize it as a right hand wall existing. So when the front IR sensor was triggered, instead of turning right, it would turn left. When I added an extremely sensitive pushbutton from a VCR, it completed all corners</p>	
<p>Summary Statement (In one sentence, state what your project is about.) I tested to see which sensors would allow which would allow a robot to navigate it's way through a maze the quickest.</p>	
<p>Help Received in Doing Project (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4. Father helped with electronics; Mother helped with backboard</p>	