



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> <b>Franklin C. Moirao</b>	<b>Project Number</b> <b>J0916</b>
<b>Project Title</b> <b>Radio Data Link</b>	
<b>Objectives/Goals</b> My Goal is to construct a reliable radio data link operating in the 70cm Amateur Radio band to be used to send commands and telemetry for a range up to 50m. The data link will allow the transmission of fixed-length messages of up to 32 bytes with error detection but no error correction (other than retransmission). Primary use will be to control a future robot project. Messages will be displayed on a 32-character LCD.	
<b>Abstract</b>	
<b>Methods/Materials</b> <ol style="list-style-type: none"><li>1. Construct transmitter and receiver.</li><li>2. Test ability to turn TX on/off and detect carrier at the RX.</li><li>3. Transmit and detect a fixed bit-stream.</li><li>4. Transmit and detect a multi-character message.</li><li>5. Test framing..</li><li>6. Test checksum algorithm.</li><li>7. Transmit arbitrary messages.</li><li>8. Demonstrate simple robot control.</li></ol> <b>Materials:</b> <ol style="list-style-type: none"><li>1. One Boe-Bot with a propeller chip on it</li><li>2. One small 3"x2" LCD display</li><li>3. One eight pin receiver</li><li>4. One six pin transmitter</li><li>5. 11 small 3" wires</li><li>6. One display cable</li></ol>	
<b>Results</b> Demonstrated the ability to send messages reliably for a range of 50m (the limits of my test area # more range is likely possible). Verified all functions including error-detection.	
<b>Conclusions/Discussion</b> The radio data link was successful and met the design goals.	
<b>Summary Statement</b> My Goal is to construct a reliable radio data link operating in the 70cm Amateur Radio band to be used to send commands and telemetry for a range up to 50m.	
<b>Help Received</b> Brian Lloyd, my science teacher, helped me learn the programming language and introduced the concepts of packet radio systems.	