The Lazarus Project
UNC Robotics
Topics To Be Covered:

- Identified Problem
- Hypothesized Solution
- Results
Identified Problem
Redefined objective year-by-year
Limited availability of resources
Research conducted in a unilateral fashion
Little mentorship of interested researchers
Components susceptible to decay
Mobile hardware inoperable in adverse environmental conditions
Hypothesized solution
- Proxy server approach
- Simplified API
- Intuitive hardware
- Expandable and adaptable interface
### Simplified API

<table>
<thead>
<tr>
<th>Command:</th>
<th>Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>laz.SetMotorSpeeds(m1,m2,m3,m4,...);</code></td>
<td>Function call to set vehicle motor speeds, command can accept an infinite number of integer (-250 - 250) motor speeds, however only those speeds which have a corresponding motor will be executed.</td>
</tr>
<tr>
<td><code>laz.ReqMotorSpeed(*m1, *m2, *m3, *m4,...);</code></td>
<td>Function call to request vehicle motor speeds, request can report an infinite number of motor speeds, however only those speeds which have a corresponding motor will be reported. If encoders are detected encoder rates will be returned, otherwise the last received value will be returned.</td>
</tr>
<tr>
<td><code>laz.WriteByte(Addr, Reg, Buff);</code></td>
<td>Function call to write to a specific I2C device and register, usually used to initialize an I2C device on the bus. (currently only supports hex addresses)</td>
</tr>
<tr>
<td><code>laz.ReadByte(Addr, Reg, Buff, BuffLen);</code></td>
<td>Function call to execute an I2C transfer from a specific register at a specific address. (currently only supports hex addresses)</td>
</tr>
<tr>
<td><code>laz.OpenSerial(struct *SerialDev, FN);</code></td>
<td>Function call to open a serial connection to a serial device. Requires some knowledge of structures.</td>
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<tr>
<td><code>laz.WriteSerial(struct SerialDev, Buff, BuffLen);</code></td>
<td>Function call to send a command via TTL serial. Requires some knowledge of structures.</td>
</tr>
<tr>
<td><code>laz.ReadSerial(struct SerialDev, Buff, BuffLen);</code></td>
<td>Function call to read from a TTL serial device. Requires some knowledge of structures.</td>
</tr>
</tbody>
</table>
Intuitive Hardware
Expandable and Adaptable Interface
Results
What was discussed:

- Identified Problem
- Hypothesized Solution
- Results