TrackStar: Motion Tracking Stagelight Mount

Motivation

TrackStar aims to provide autonomous, real-time tracking and lighting of an on-stage target. The system would be compatible with standard lighting fixtures and controls, and provide lighting to all areas of the stage.

Objectives

- Real-time Tracking
- Cover all areas of stage
- Mount to current fixed lights and scaffolding
- DMX Communication
- Quiet Operation

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Target Value</th>
<th>Acceptable Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range of Motion</td>
<td>Pan 300 °, Tilt ±45°</td>
<td>Pan 180 °, Tilt ±30°</td>
</tr>
<tr>
<td>Speed</td>
<td>180 deg/sec, 30 deg/sec</td>
<td>60 Hz</td>
</tr>
<tr>
<td>Camera Frame Rate</td>
<td>120 Hz</td>
<td>60 Hz</td>
</tr>
<tr>
<td>Mounting</td>
<td>Hang from 1.5” Pipe</td>
<td>Upright operation</td>
</tr>
<tr>
<td>Overall Sizing</td>
<td>2’ x 1’ x 2’</td>
<td>2.5’ x 2’ x 2.5’</td>
</tr>
<tr>
<td>Battery Life</td>
<td>5 hours</td>
<td>3 hours</td>
</tr>
<tr>
<td>Operation Noise</td>
<td>30 dB</td>
<td>50 dB</td>
</tr>
</tbody>
</table>

Selected Design

User Interface

- Manual Configuration Mode
- Tracking Mode
- Controlled by DMX

Next Semester Plan

- Motor Integration
- Structural and Beacon Housing
- Pattern Discrimination
- Beacon PCB

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