Game Analysis

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| **Action** | **Criteria** | **Match Points** | | |
| **Auto** | **TeleOp** | **Endgame** |
| Deliver Pixels | Pixels have to be securely grabbed and put carefully on to the board. | Pre-load 2 yellow and/or purple pixels  Pixel delivered to backstage - 3pts.  Pixel delivered to backdrop – 5pts | Backstage – 1pt  Backdrop – 3pts  3 Pixel Mosaic – 10pts |  |
| Parking Robot | Making sure robot ends where it needs to at the end of Autonomous and Endgame | Robot parked in Backstage- 5pts |  | Robot parked in Backstage – 5pts |
| Drone Launch | Launch drone smoothly from robot and attempt to get into closest landing zone |  |  | Zone 1- 30pts  Zone 2- 20pts  Zone 3- 10pts |
| Suspend Robot on Rigging | Use arm mechanism to fully suspend robot from the rigging |  |  | Robot Fully Suspended on Rigging - 20 pts |
| Pixels on Spikemarks | Place the pixels on spike mark tape of which the team prop is located. | Purple – 10pts  Purple Pixel on Spike mark tape with team prop- 20pts |  |  |
| Get Pixels above Set Lines | Stack the pixels so that they can cross the set lines |  | 10 pts per set line crossed |  |
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| **Mechanism** | **Priority** | **Criteria** |
| Intake | Must Have | * Able to intake pixels at different angles (fast rotating compliant wheels) |
| Nice to Have | * A quick intake to outtake transfer (possibly when robot is moving) |
| Explore | * Using encoders to detect pixel angle and adjust based on that * Make the intake and outtake in one mechanism instead of two separate mechanisms |
| Outtake | Must Have | * Grip/release pixels |
| Nice to Have | * Extensions to stack higher |
| Explore | * Being able to rotate the outtake when at different positions |
| Drone Launch | Must Have | * Drone that can properly fly, and fly far enough |
| Nice to Have | * Drone launch smoothly and land closer to the border, without staying in the field. |
| Explore | * Mechanisms used to keep drone still, so it doesn’t move during Autonomous period. |
| Pixels on Spikemarks | Must Have | * Robot can detect spikemark and place pixel on that tape. |
| Nice to Have | * A team prop used as a spikemark |
| Explore | * If color sensors can be used to detect spike marks |

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| **Engineering**  **Specification** | **Description** | **Value** | **Unit** | **Other Considerations** |
| 1 | Width | Enough to fit within sizing tool | mm | The width and length dimensions should be much less than the given |
| 2 | Height | Shorter than truss | mm | Top must be sufficiently lower than the truss |
| 3 | Length | Enough to fit inside sizing tool | mm | Must fit inside 18-inch sizing tool. |
| 4 | Weight |  | kg | Should not be too heavy, easily transportable. |
| 5 | Cost |  | USD | Can have high cost after covering parts, registration, etc. |
| 6 | Collection Rate |  | sec/pixel | Should be quick with picking up and navigating throughout. |
| 7 | Driving Speed |  | sec/pixel | Should be quick with good navigation, control, and pixel collection rate |
| 8 | Vertical Reach | Reach top of dashboard | mm | Should be enough to put pixels high on dashboard, and suspend from rigging |
| 9 |  |  | mm |  |

* 1. EasyOpenCV - Ajay
  2. Odometry/Roadrunner - Harsh
  3. Drivetrains - Dhruv
  4. Power Transmission - Kayan
  5. Intake/Outtake - Kavin
  6. Arms/Transfers - Srilakshminath