Color Detection Process User uploads draft board image User crops the board User chooses color detection method **Auto-Generate Colors** 'Detect Colors Automatically' Tier 1: Smart OCR-based Detection System performs OCR on all cells to find position text + player names For each recognized position (QB, RB, etc.), collect HSVsamples from cells containing that position Calculate HSV color ranges using percentiles and padding Successfully detected ≥ 3 positions? Manual Color Selection Tier 2: K-means Clustering 'Pick Color' buttons User clicks 'Pick Color' for Apply K-means clustering position with 6 clusters to entire (QB, RB, WR, TE, K, DST) image Filter pixels by User clicks specific pixel saturation/value Yes on image (Remove background/white pixels) System samples exact Sort clusters by size RGB/HSV No (largest to smallest) from that pixel Assign clusters to positions Color stored as profile in order: for that position $WR{\rightarrow}RB{\rightarrow}QB{\rightarrow}TE{\rightarrow}DST{\rightarrow}K$ Use OCR-derived color All 6 positions Generate color profiles profiles selected? (Lower confidence: 0.5) (High confidence: 1.0) Yes Proceed to board processing User can refine colors manually or proceed to processing System processes entire board using established color profiles **Color Detection Methods** Manual Color Selection: User directly clicks pixels to select colors for each position Auto-Generate Colors:Intelligent two-tier system for automatic color detection Tier 1 - Smart OCR Detection: Uses actual draft board content (preferred method) Tier 2 - K-means Fallback: Clustering-based detection when OCR fails Final Processing:Board processing using established color profiles

Two-Tier Intelligence:

 Confidence Scoring: High confidence (1.0) for OCR, lower (0.5) for K-means
 User Control: Manual refinement always available • Graceful Degradation: System adapts to image quality and layout variations

Smart First: OCR-based detection reads actual position text and player names
 Fallback Safety: K-means clustering ensures system always works

K-means Clustering Details:

When Tier 2 activates, the system:

- Filters out background/white pixels (saturation ≥40, value ≥60)
 Performs K-means clustering with 6 clusters
 Sorts clusters by pixel count (largest first)
 Assigns to positions in priority order: WR → RB → QB → TE → DST → K
 This is where your K-means visualization plots are most relevant!