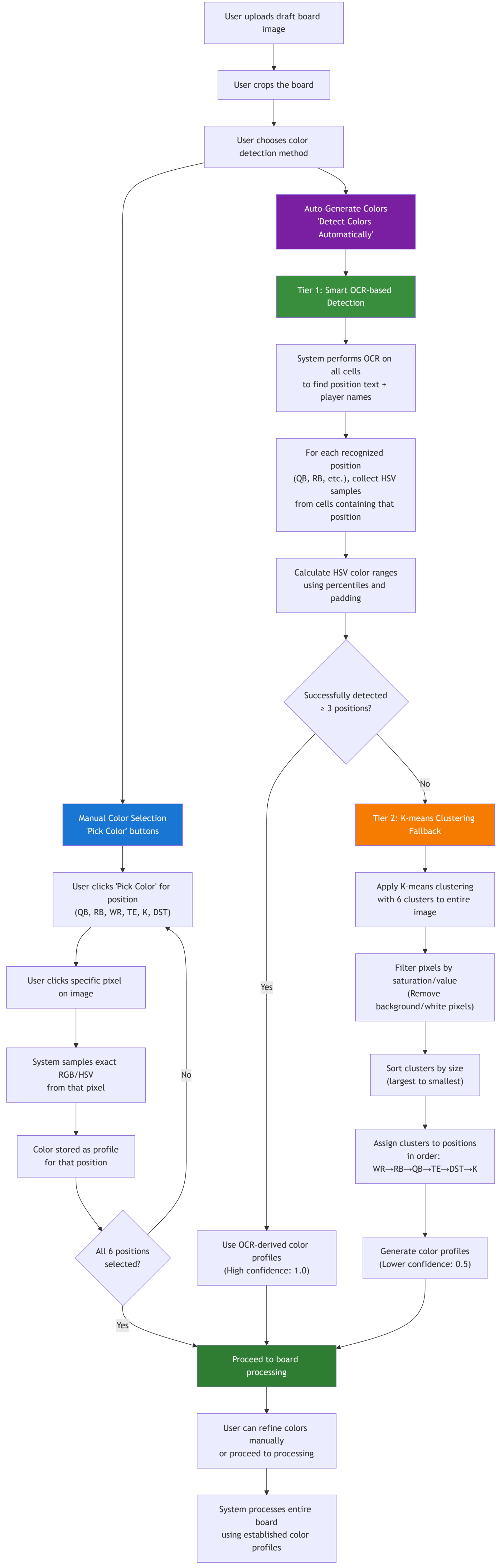


Color Detection Process



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:

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

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 \rightarrow RB \rightarrow QB \rightarrow TE \rightarrow DST \rightarrow K
- This is where your **K-means visualization plots** are most relevant!