

The background is a solid teal color. It features several abstract geometric elements: a large, faint, multi-layered circle in the upper right; several smaller, faint circles of varying sizes scattered in the upper right and middle right; and a series of vertical bars of increasing height from left to right in the bottom right corner.

REAL-TIME TRACKING OF HOCKEY PLAYERS FROM AMATEUR VIDEOGRAPHY

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Problem Statement

- Measure velocity of hockey players from live stream video
- Provide critical speed information for coaches and scouts
- Enhance fan experience
- Real-time processing
- Platform: Smartphone, Livestreams



track count: 754

RANSAC





Dependencies and Libraries

- Language: Python 3
- Libraries
 - OpenCV
 - scikit-learn
 - NumPy

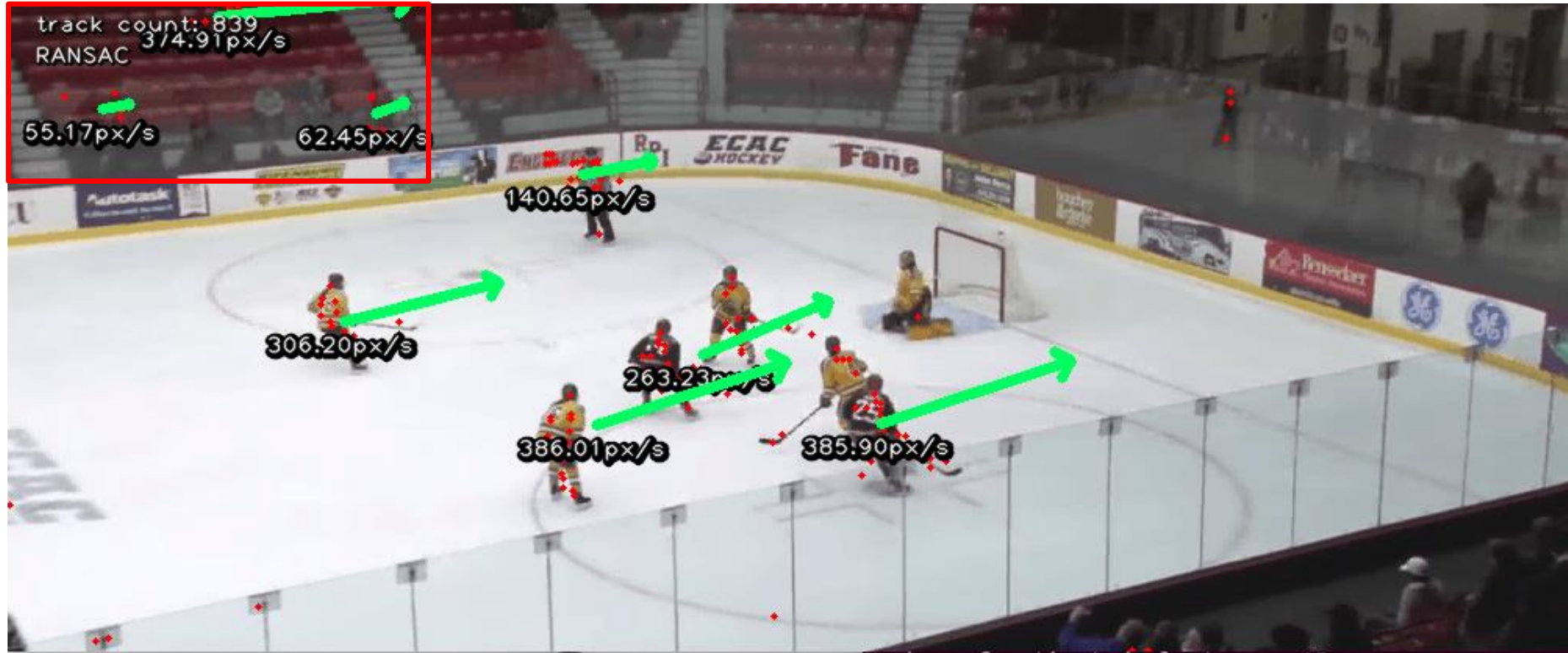
Feature (Corner) Detection in OpenCV



Optical Flow, Homography and RANSAC on Features

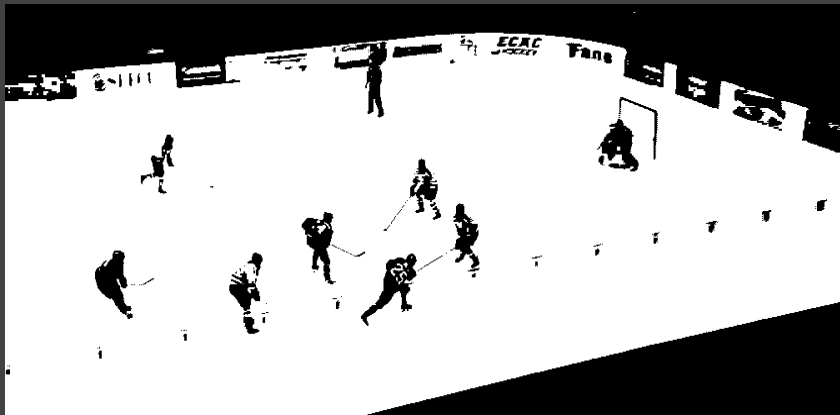


Clustering and Velocity - Before Mask

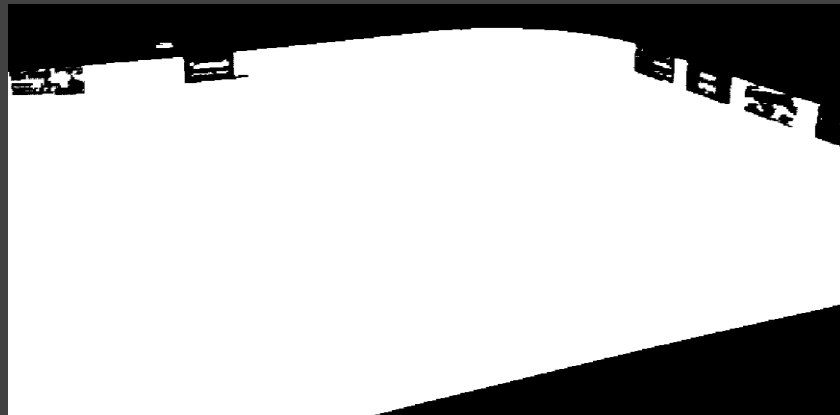


Creating Brightness Mask

1. Thresholding by Intensity of Grayscale Image



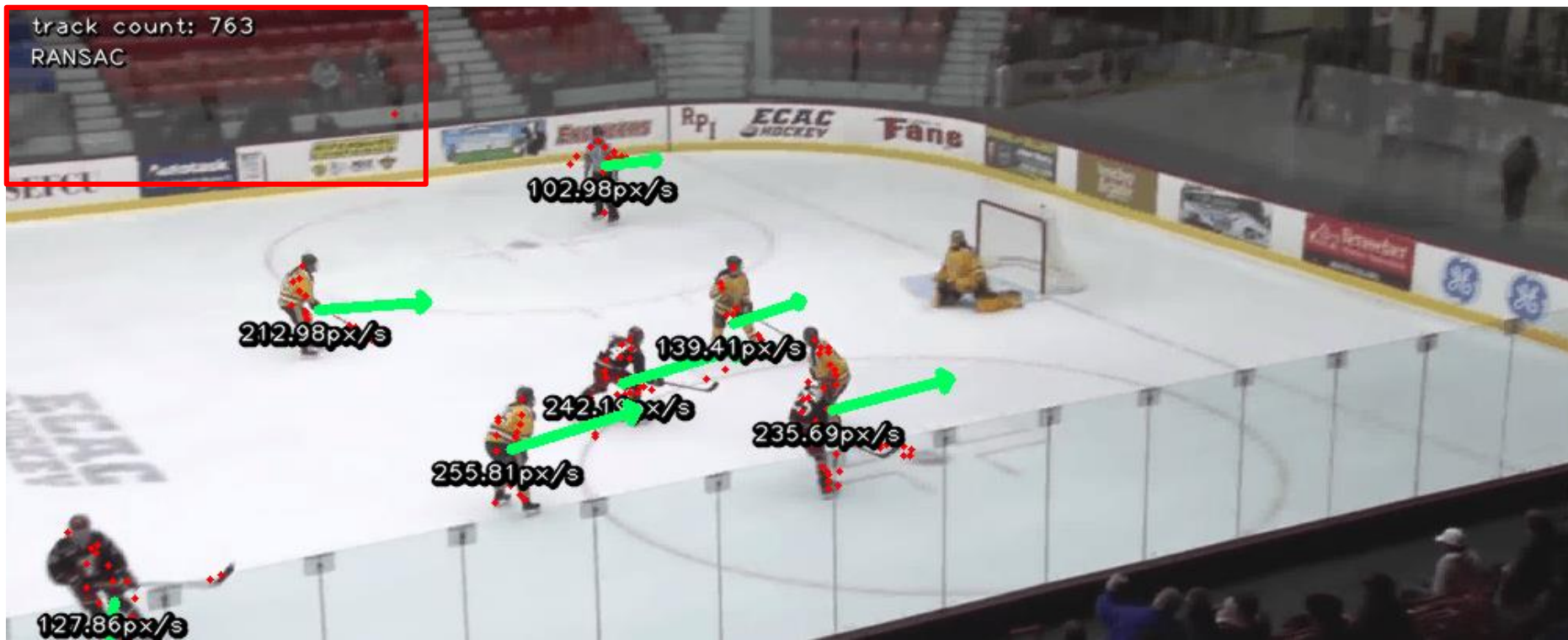
2. Drawing and Filling Contours



3. Soften Mask



Clustering and Velocity - Mask Applied



Cluster with K Mean Shift and Velocity





Limitations

- Relies on poor video tracking quality of players
- Professional videographers and cameramen have the proficiency and equipment to track players
- Amateurs will not have the same capabilities



Future Steps

- Translating pixels per second to meters per second
- Migrating the system to mobile platforms
- Implement edge computing to increase processing power/framerate



Questions?