定义形态学处理的结构元素

Mat kernel = getStructuringElement(MORPH\_RECT, Size(3, 3));

熵值计算

cv::Scalar ent = Entropy(frame);

膨胀

dilate(frame, img1, kernel);

转换到HSV空间并根据这个阈值分割

cv::cvtColor(img1, hsv, CV\_BGR2HSV);

Scalar lower(hl, sl, vl);

Scalar upper(hh, sh, vh);

cv::inRange(hsv, lower, upper, mask);

开运算

mask = imgopen(mask, kernal\_size);

提取轮廓

cv::findContours(mask, contours, hierarchy, RETR\_LIST, CHAIN\_APPROX\_SIMPLE);

求轮廓面积 周长 圆形度

double area = contourArea(contours[i]);

double length = arcLength(contours[i], true);

double roundIndex = 4 \* 3.1415926 \* area / (length \* length + 0.00001);

绘制轮廓

cv::drawContours(frame, contours, -1, Scalar(0, 0, 255), 3);

轮廓等效为椭圆，用于计算偏心率

RotatedRect box = fitEllipse(contours[i]);