# 机器视觉 - 第七次作业

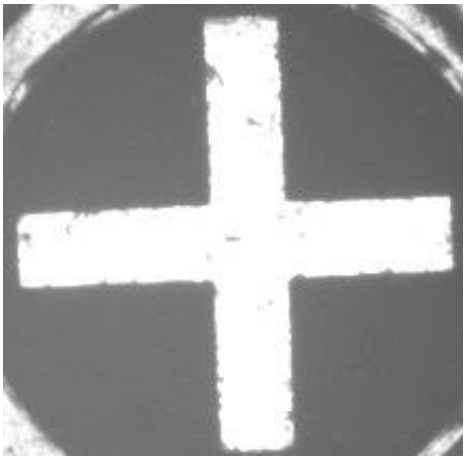
## 代码

```
#include <iostream>
#include <string>
#include <vector>
#include <time.h>
#include "opencv2/opencv.hpp"

#define IMGNUM 19
#define LEVEL 2

using namespace cv;
using namespace std;

void getPyramidLevel(Mat& in, Mat& out, int ksize, float sigma, int level);
void imncc(vector<Mat>& ins, Mat& model, vector<Mat>& nccscores);
void markmatch(Mat& img, Mat& score);

int main(){
    vector<Mat> inImages, grayImages, bluredImages, nccScores;
    Mat model, bluredModel;
    clock_t startclock, endclock;

    cvtColor(imread("../img/model.jpg"), model, COLOR_RGB2GRAY);
    for(int i=0;i<IMGNUM;++i){
        /** 请自行补充 **/
    }

    cout << "图像读取完成，开始计时。\n";
    startclock = clock();
    getPyramidLevel(model, bluredModel, 5, 3, LEVEL);
    for(Mat& img :grayImages){
        /** 请自行补充 **/
    }

    imncc(bluredImages, bluredModel, nccScores);

    for(int i=0;i<IMGNUM;++i){
```

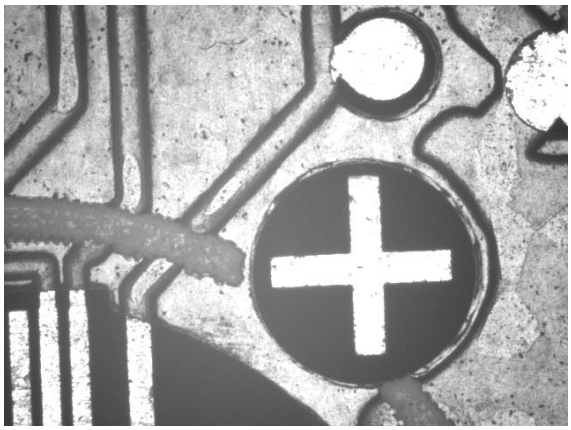
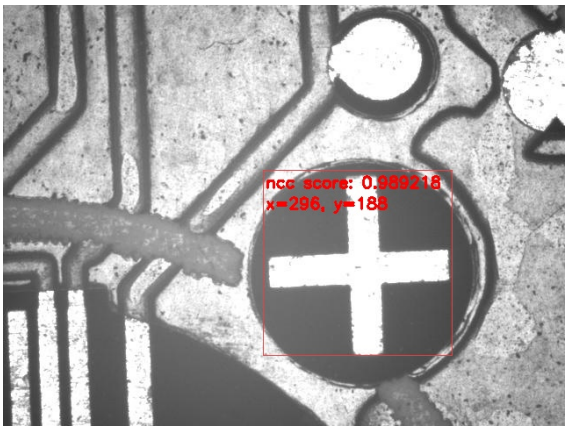
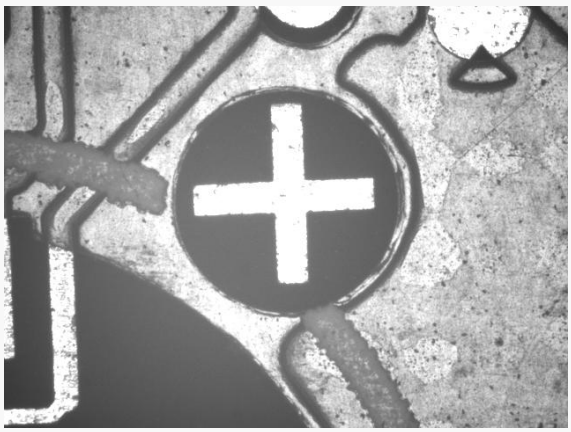
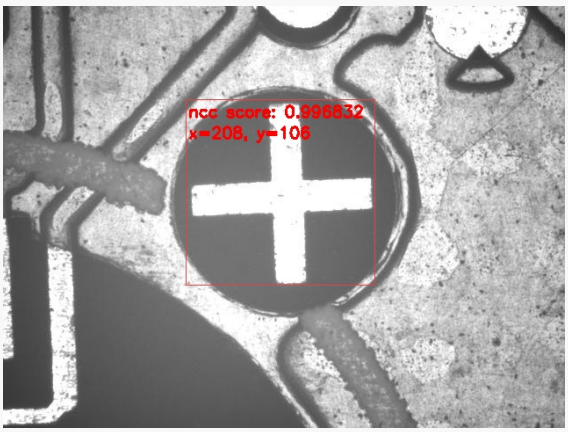
```
        markmatch(inImages[i], nccScores[i]);
    }
    endclock = clock();
    cout << "图像匹配、标记完成，计时结束。\n";
    cout << "共用时" << (endclock-startclock)/1e6 << "s，平均用时" << (endclock-
startclock)/1e3/IMGNUM << "ms。\n";

    for(int i=0;i<IMGNUM;++i){
        imwrite("../result/out_"+to_string(i)+".jpg", inImages[i]);
    }

    return 0;
}

void getPyramidLevel(Mat& in, Mat& out, int ksize, float sigma, int level){
    Mat tmpImg = in;
    for(int i=1;i<level;++i){
        Mat bluredImg;
        GaussianBlur(tmpImg, bluredImg, Size(ksize, ksize), sigma);
        resize(bluredImg, tmpImg, Size(bluredImg.cols/2, bluredImg.rows/2));
    }
    out = tmpImg;
}

void imncc(vector<Mat>& ins, Mat& model, vector<Mat>& nccscores){
   /** 请自行补充 **/
}

void markmatch(Mat& img, Mat& score){
    /** 请自行补充 **/
}
```

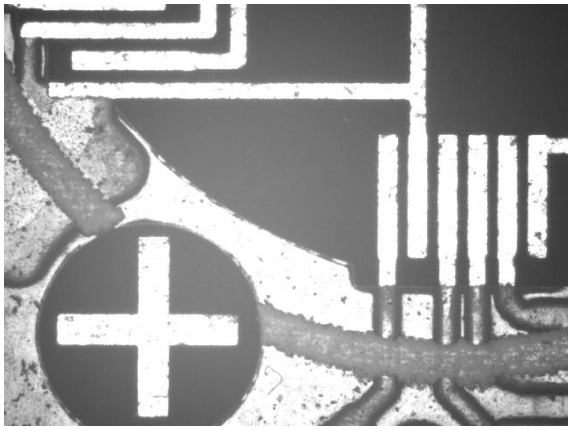
# 效果

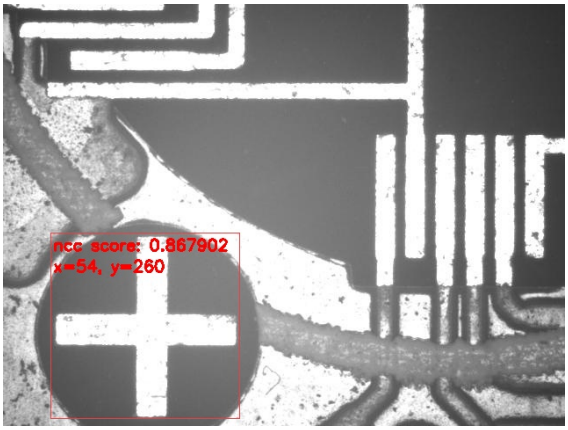
使用模板：

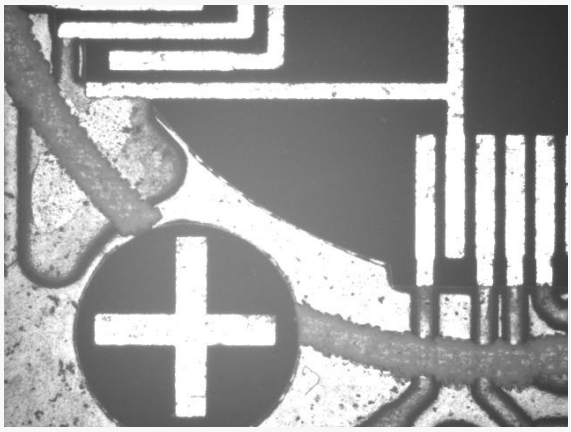


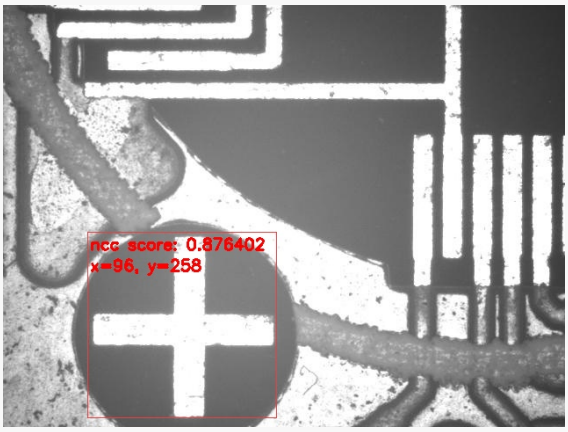
效果：

| 原图 | 结果图 |
| --- | --- |
|  |  ncc score: 0.989218<br>x=296, y=188 |
|  |  ncc score: 0.996832<br>x=208, y=106 |
| | |




ncc score: 0.867902
x=54, y=260

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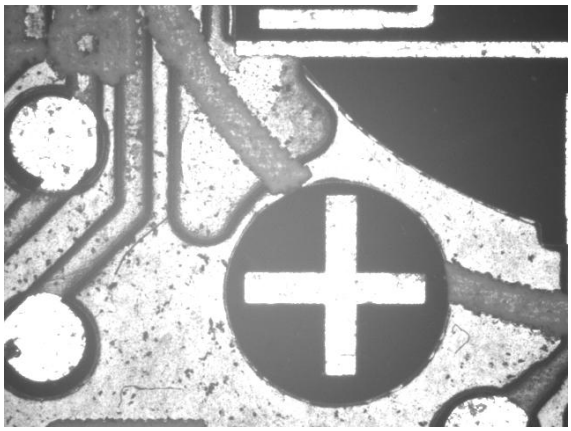
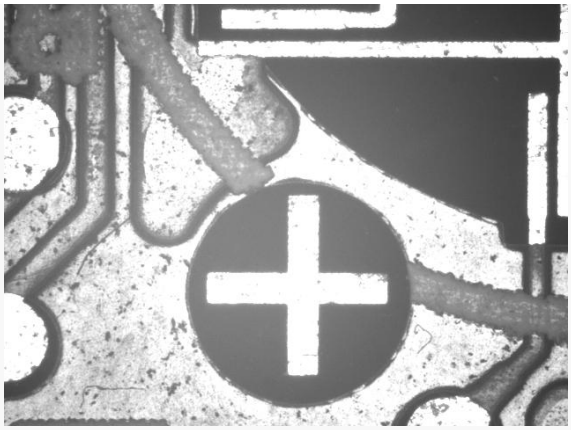
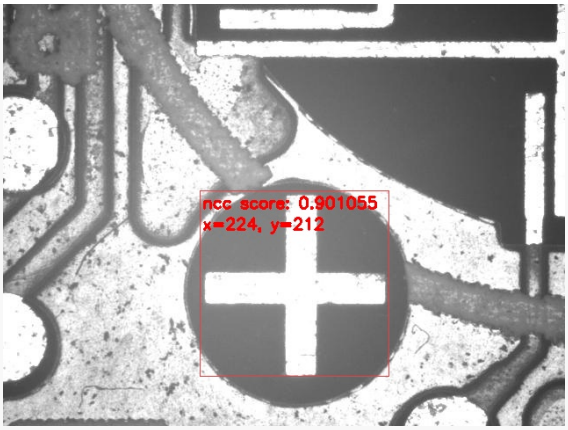
x=96, y=258



ncc score: 0.902195
x=266, y=212

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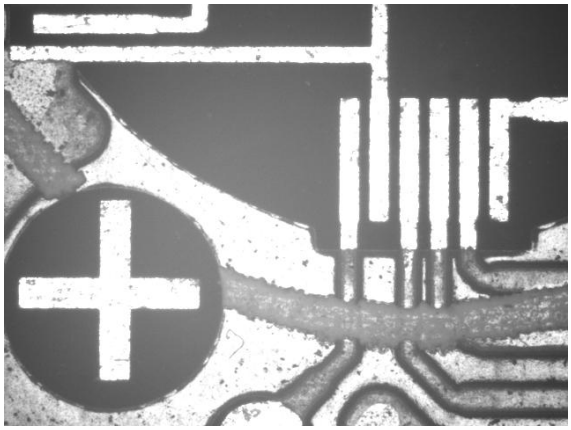
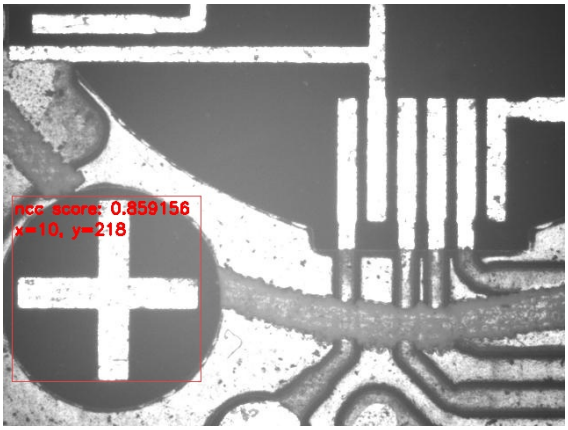
x=224, y=212

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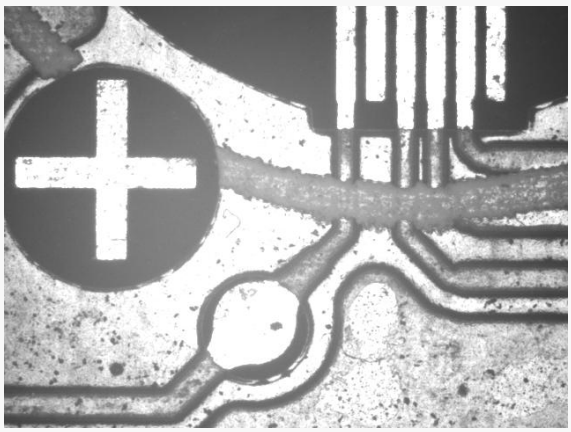
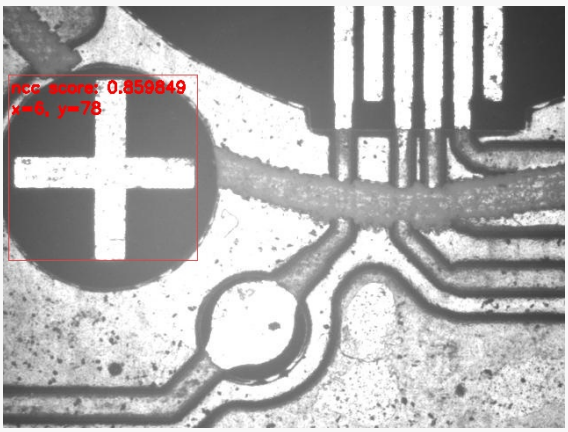
x=10, y=218

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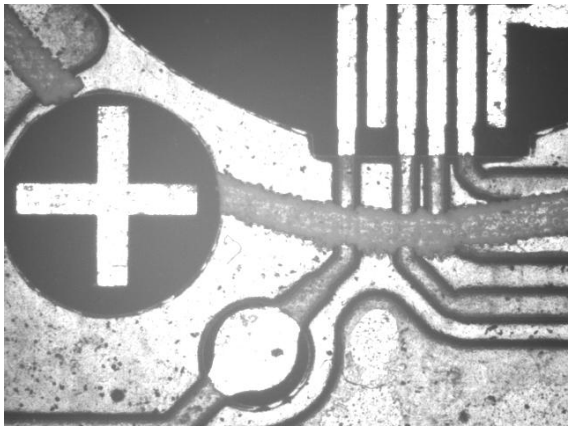
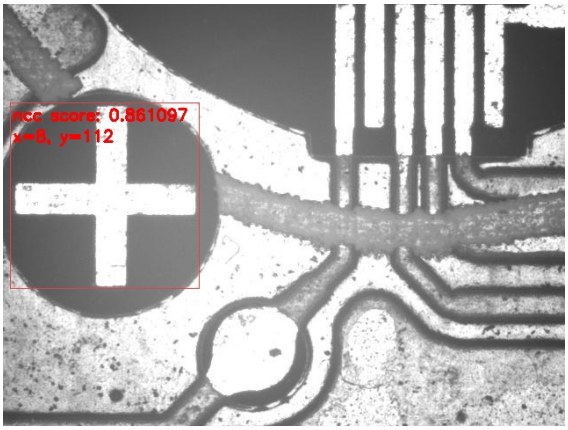
x=6, y=78

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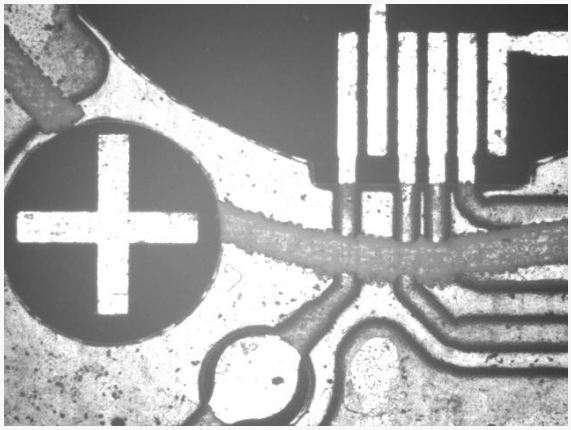
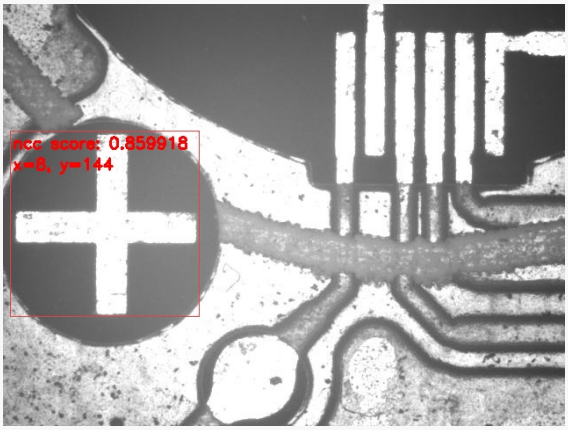
x=8, y=112

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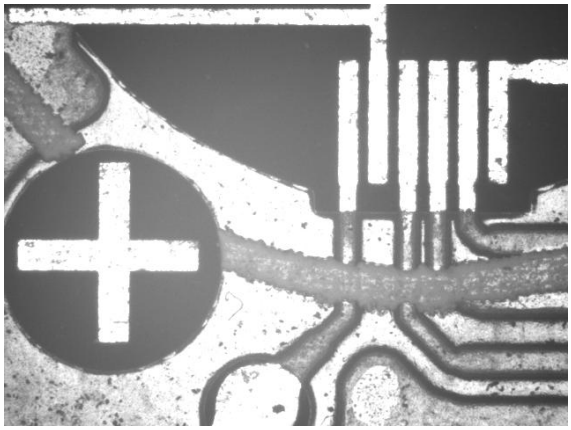

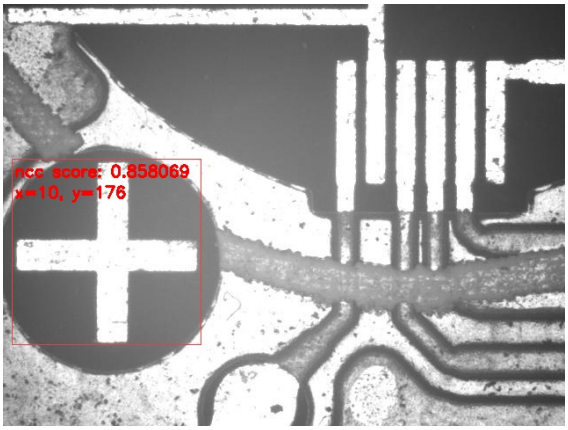
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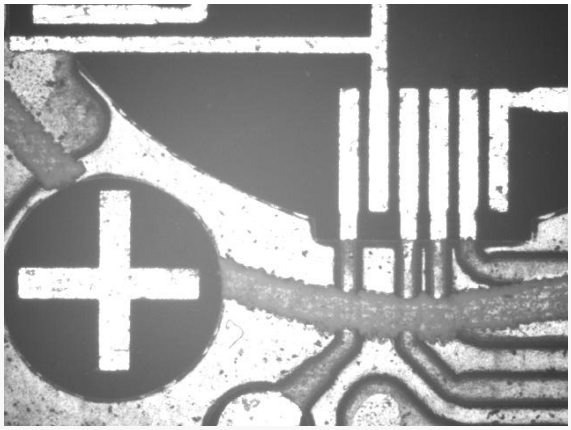

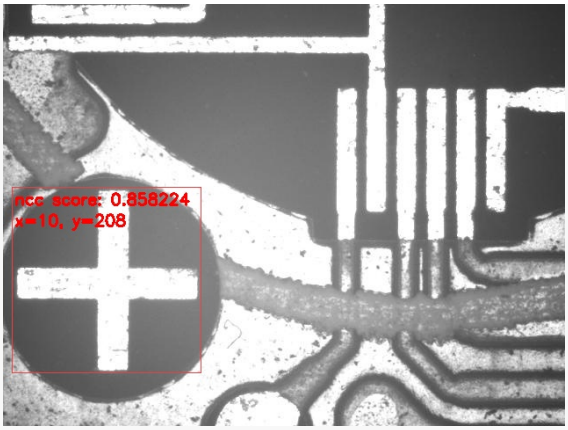
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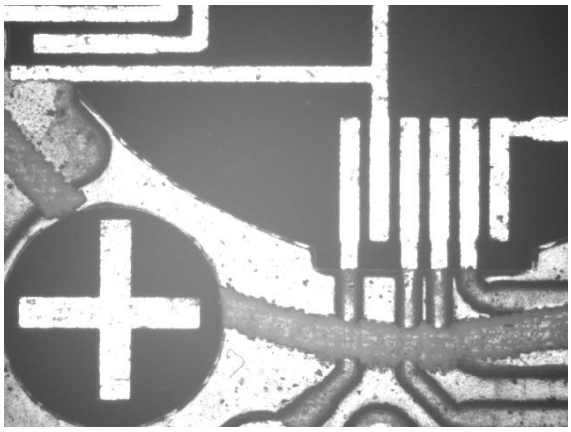

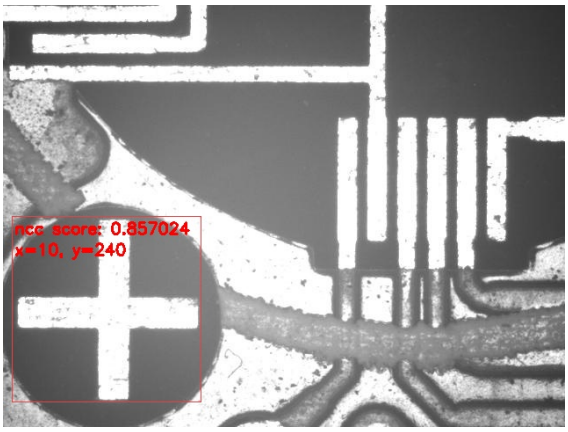
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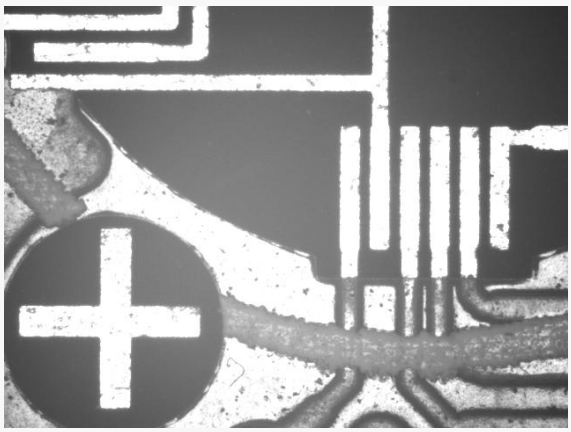

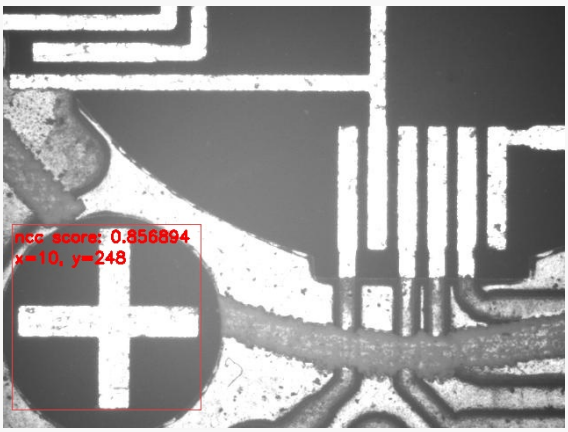
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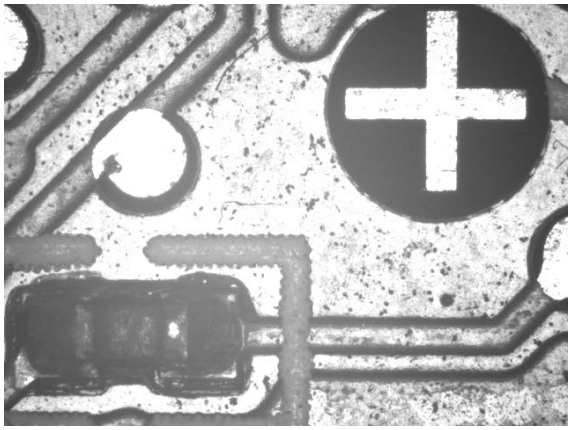

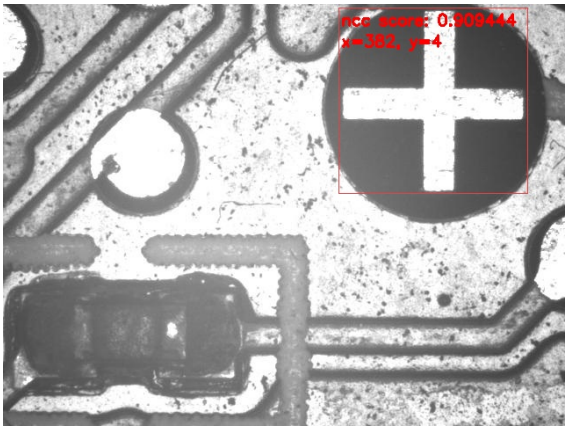
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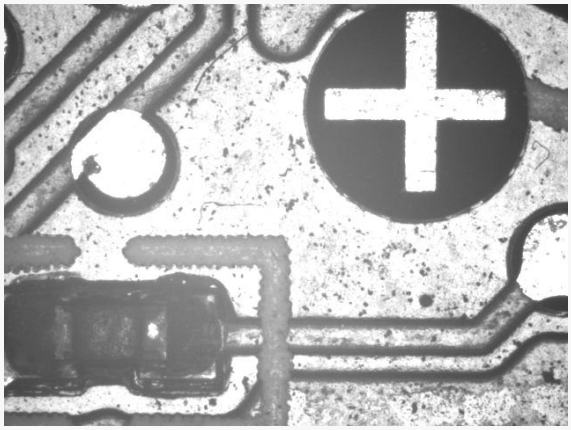

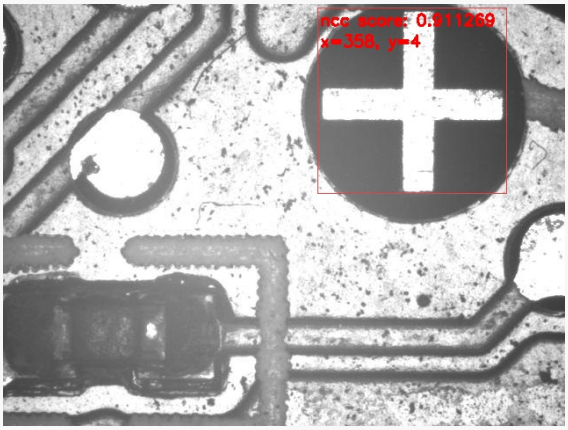
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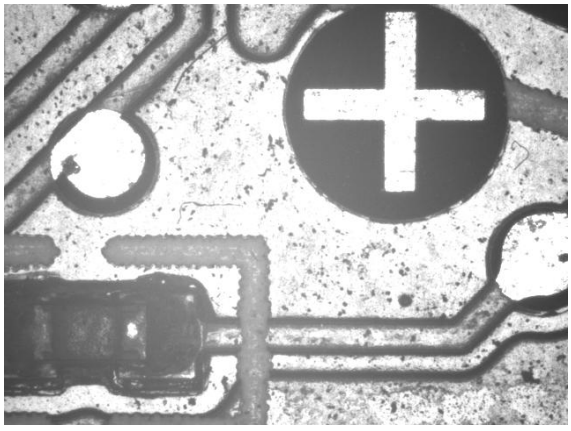

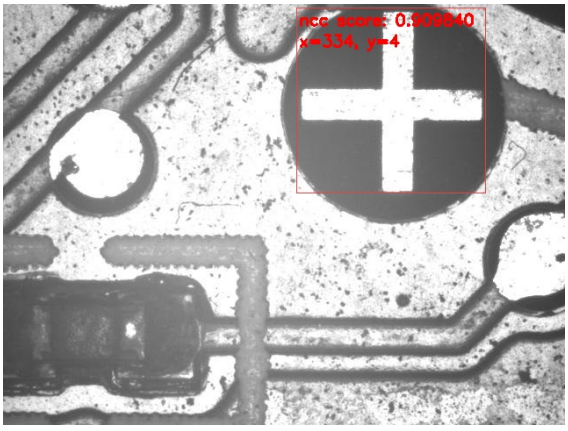
ncc score: 0.909840
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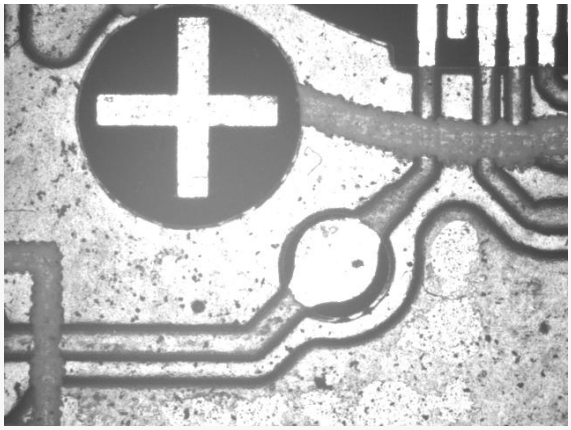

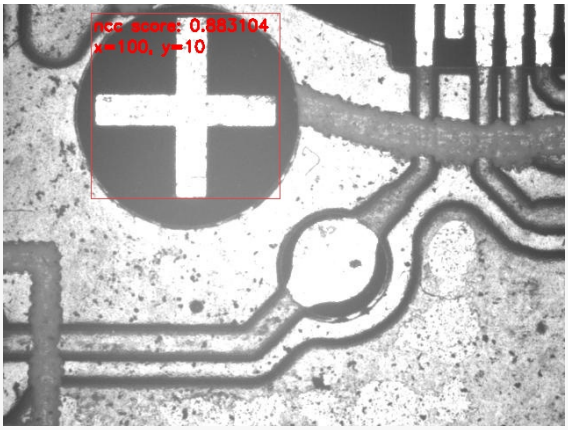


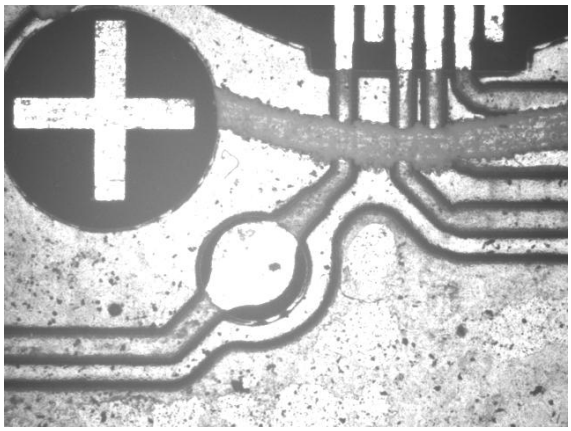

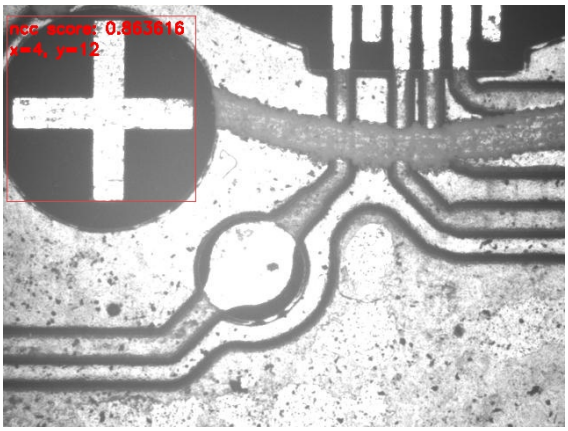


终端输出：

```
sieroy@portableDeepin:/media/sieroy/Data/files/homework/MV/07/build$ make
Scanning dependencies of target imncc
[ 50%] Building CXX object CMakeFiles/imncc.dir/imncc.cpp.o
[100%] Linking CXX executable imncc
[100%] Built target imncc
sieroy@portableDeepin:/media/sieroy/Data/files/homework/MV/07/build$ ./imncc
图像读取完成，开始计时。
图像匹配、标记完成，计时结束。
共用时9.89067s，平均用时520.562ms。
sieroy@portableDeepin:/media/sieroy/Data/files/homework/MV/07/build$ _
```