Hand-drawn electronic circuits recognition

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Description

In real life, it's often very handy to draw an electronic circuit with various components on paper. However, paper is not a reliable media for storing information. On the other hand, sometimes we want to try things out and test if the sketched circuit is functional, which is impossible to realize on paper. To solve this problem, we propose the idea to scan the circuit sketch on paper with our Android device and translate it into standard layouts and run circuit simulations.

Challenges in sketched symbol recognition lie in the different sketch styles with regard to stroke order, direction, etc. We plan to adopt the following approach:
1.Solve correspondence problem between reference image and sketch.
2.Use correspondence to solve alignment problem.
3.Compute distance between the corresponding points of the two shapes.
4.Find the reference image in our database that has the lowest distance score.
We will also continue looking for other promising methods.

Plan

1. Build image databases of standard circuits.
2. Test on printed circuits. Start with recognizing single circuit components. Then test on multiple components connected together as a circuit.
3. Test on sketched circuits.

References

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