Subgraph Isomorphism for Electrical Circuits

The Goal

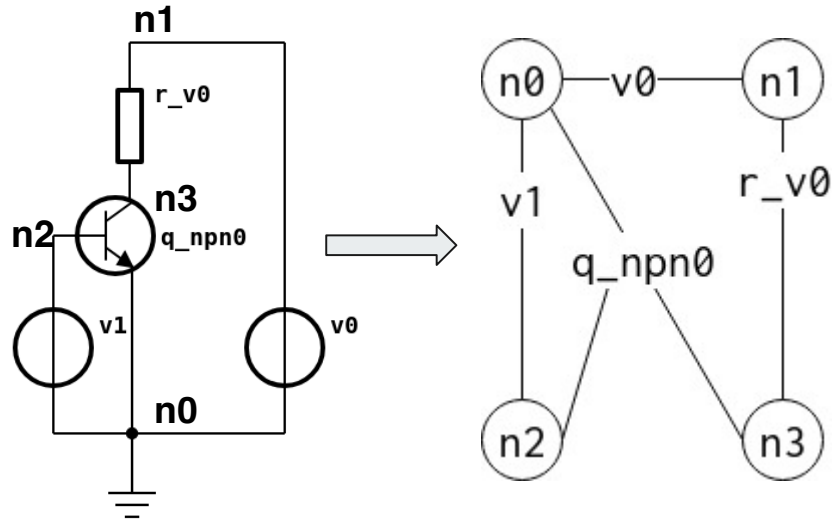Create a searchable circuit database

Why?

- Electrical circuits can't be searched (for now)

  - Redundant academic work

- Tool for students to discover new topologies
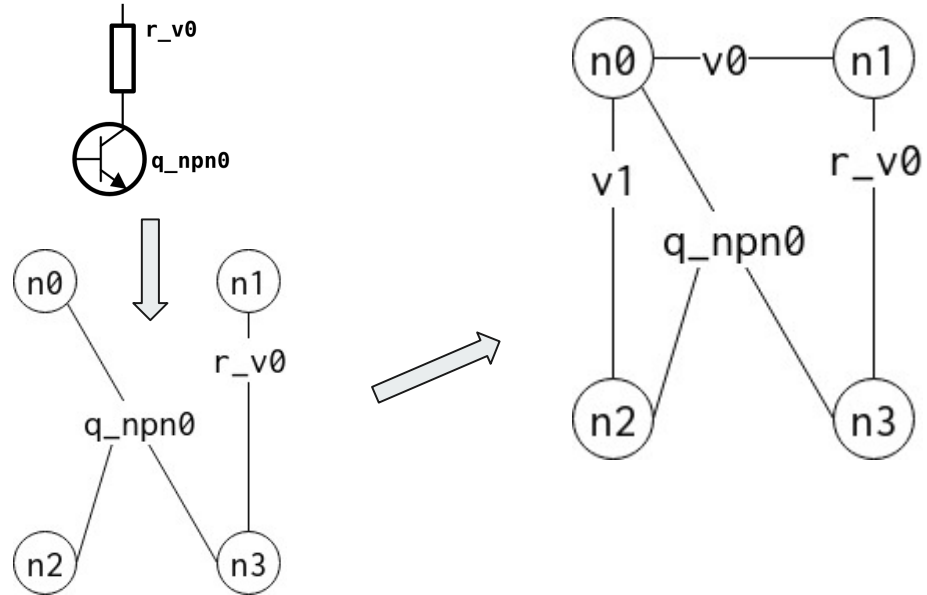
Circuit Representation

- Hypergraphs

  - Edges can connect multiple vertices
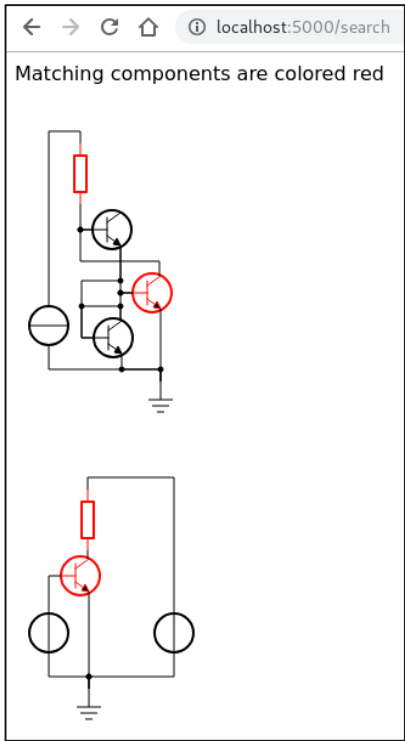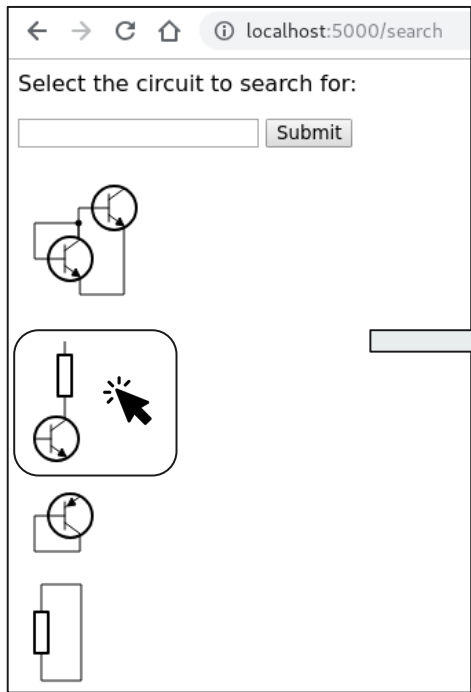
  - Twist: Edges are ordered tuples

Subcircuit Isomorphism Algorithm

- Exhaustive Search
  - Slow asymptotic behaviour
  - Somewhat necessary
- Fast for small query circuits

Visual User Interface

- Web server handles searches

- **netlistsvg** handles rendering circuits

Demo

Questions?