

Smart Street Lights

Classic style
traditional
street light



Single mushroom
shaped street light
on a pole.

Smart Street Lights

The overall introduction of LEDs in architectural lighting provides three general fields of applications:

- Substitutions
- New Lighting Applications
- Sculptural installations

Smart Street Lights

Substitution



Old Style
Sodium-vapor lamp



New Style
LED cluster lamp

Modern LED lamps seems to be more bright, their light is cool.

A simple substitution is not necessarily an improvement at all aspects.

Smart Street Lights

New Lighting Applications

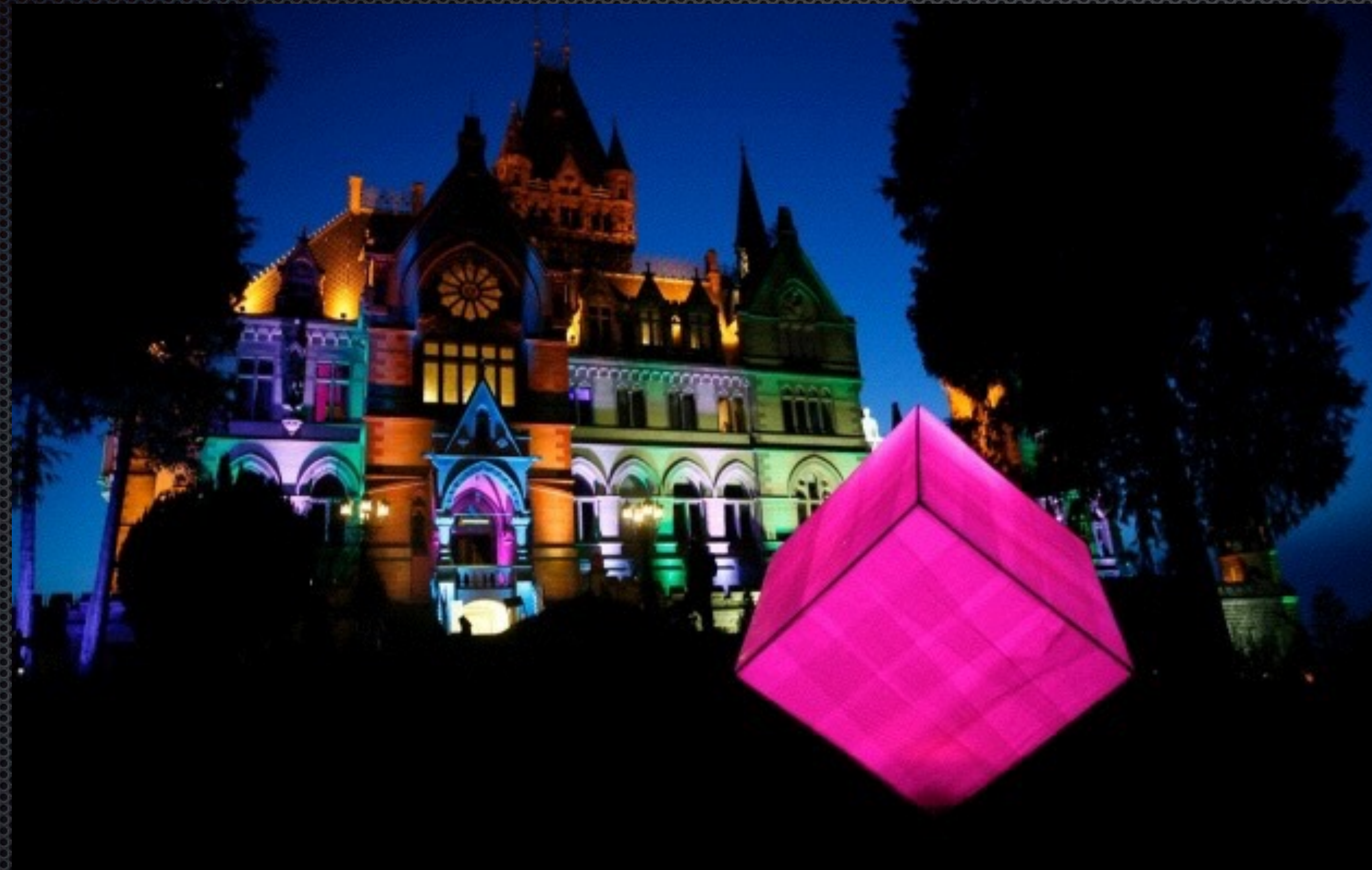
This can be endless. Just some points.

Advantages of LEDs

- Small size, even the wiring
- Although single wavelength, clustering is the way to add both brightness and colors.
- Each LED can be accessed in matters of milliseconds (PWM)

Smart Street Lights

Sculptural lighting installations



Wolfgang Flammersfeld, Schloss Drachenburg
Königswinter, Germany 2016

Smart Street Lights

The idea of a smart mushroom shaped street light on a pole.



The concept combines all types of applications into one single device.

Smart Street Lights

Building the lamp

Get an old enclosure

Remove the clutter

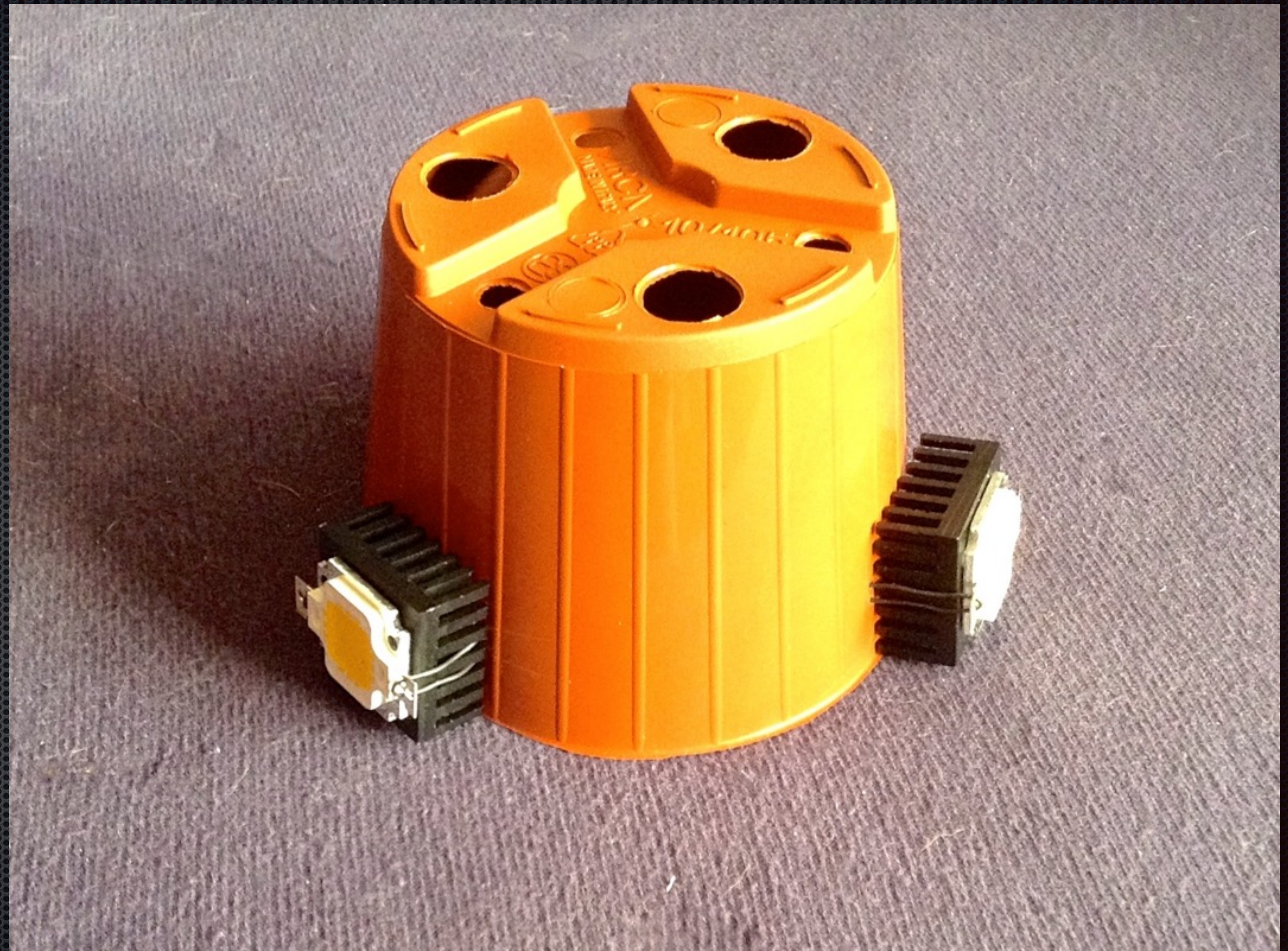
Clean the diffusor
and the reflector



Smart Street Lights

Building the lamp

3 high power LED
mounted on heating sink at
120 degree each.
They are wired from the
inside of the pot.



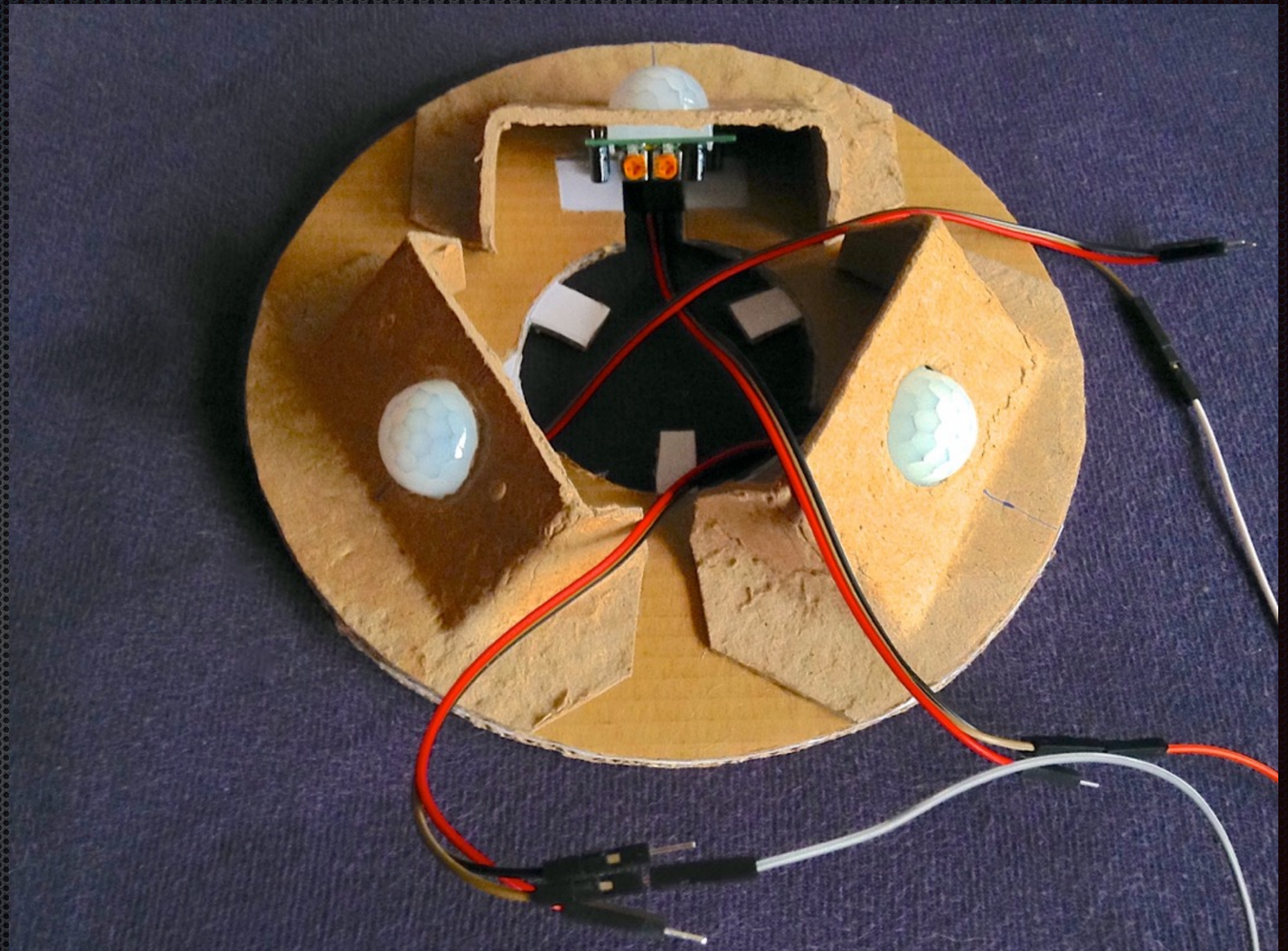
Smart Street Lights

Building the lamp

3 infrared based motion sensor, mounted 45 degrees vertical and 120 horizontally each.

This first prototype is made from cardboard, next one will be 3D-printed with plastic.

They are wired through the inside of the lamp's pole.



Smart Street Lights

Building the lamp

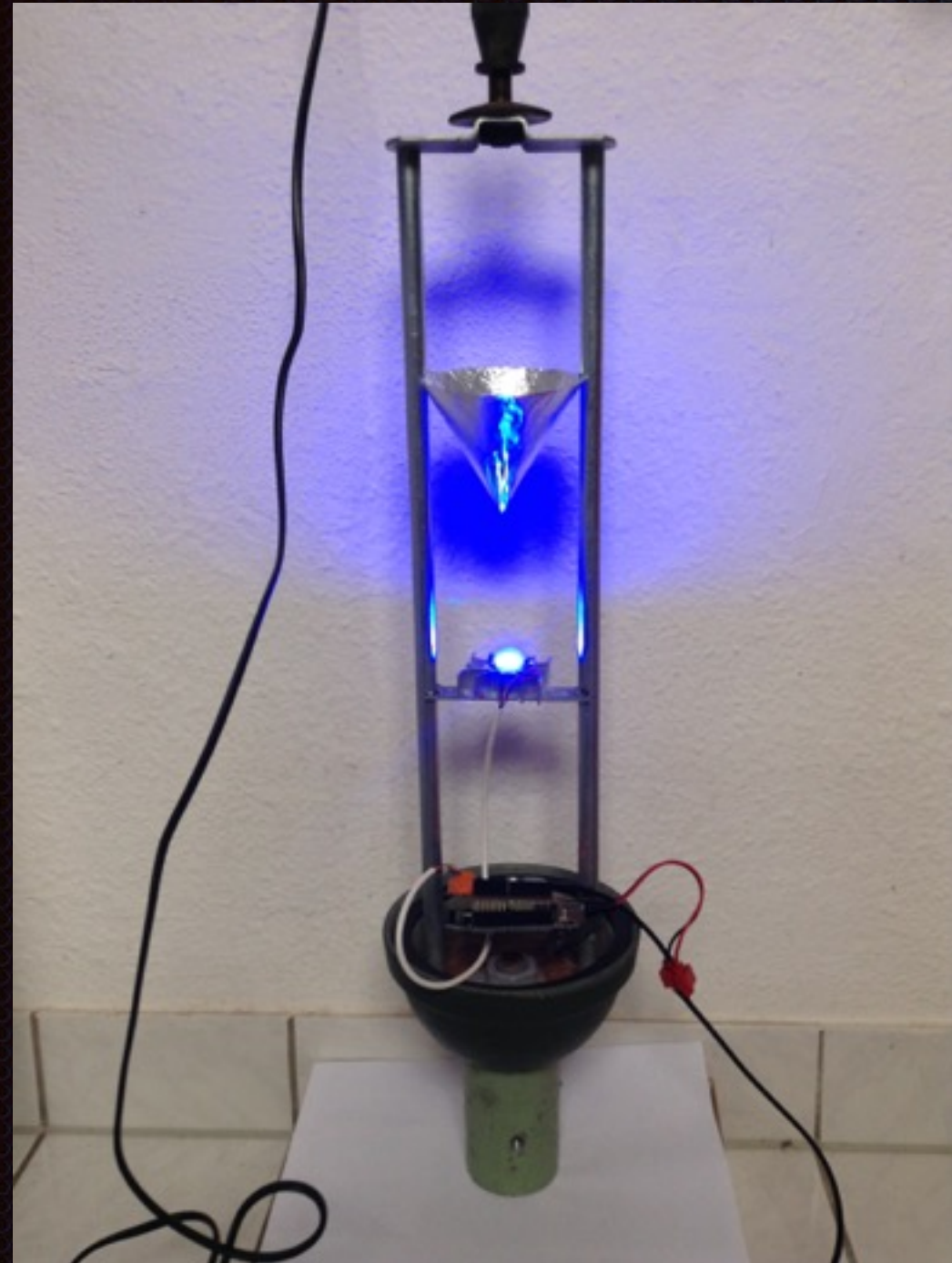
Single RGB-color LED mounted on the center of the rack.

On the bottom are the controlling boards. The red RGB-lighting-shield is stacked on top of the blue Arduino-board.



Smart Street Lights

Building the lamp



First tests with different colors and a really basic reflector.

Smart Street Lights

Building the lamp

Final result.

The fully assembled street light demonstrates the successful combination of an old style street light as enclosure with modern computational lighting techniques.

Especially the old diffusor is cause of some impressive effects.



Smart Street Lights

Video

Smart Street Lights



Smart Street Lights

Future development

A lot of ideas.

One desired feature is HomeKit integration for mobile devices.

Examination of the impact in urban scales with multiple lights.

Possible, yet unknown use cases.



Smart Street Lights

Acknowledgement



people doing strange things with electricity in Aachen

<https://hci.rwth-aachen.de/dorkbot>

Smart Street Lights

Thank you!