

Bachelor thesis

Implementation of a cloud application

Course of study:	Computer Science or CES
Kind of project:	Programming and Simulation
Programming language:	HTML, php, MySQL, C++, (WebGL)
Earliest start:	May 2015

Topic

Solar towers use many mirrors to concentrate sun light on a central, tower-mounted receiver. The receiver then transfers the resulting heat to a fluid (i.e. molten salt or air) that, in turn, exchanges the heat to steam which powers a turbine, generating electricity. The placement of the mirrors may lead to individual mirrors being blocked and shaded; this affects the efficiency (and therefore costs) of the power plant. The model is later used for an optimisation process which finds the most efficient arrangement of mirrors.

Preliminary work

A raytracer model is already implemented. The model computes the incoming sun rays at the receiver in terms of the sun's position by considering shading, blocking and the sun shape. The program is implemented in C++.



Solar power plant PS10 in Andalusia, Spain.

Task

In this thesis a web application has to be implemented in HTML5. The application contains some windows which show three-dimensional settings of the solar tower plant (WebGL). Each registered user can load and store his personal settings of a solar tower (e.g. location, height of the tower). Therefore a MySQL database might be useful. The C++ model can be called via a php script. At the end of the thesis the simulation has to be verified and tested.

Contact

This project is a corporation of the *Theory of Hybrid Systems (i2)* research group headed by Prof. Dr. Erika Ábrahám, and the research group headed by Prof. Dr. Martin Frank of *MathCCES*. The project will be co-supervised by

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