Karlsruhe Institute of Technology

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Web-Platform for Online Monitoring of Large Scientific Experiments

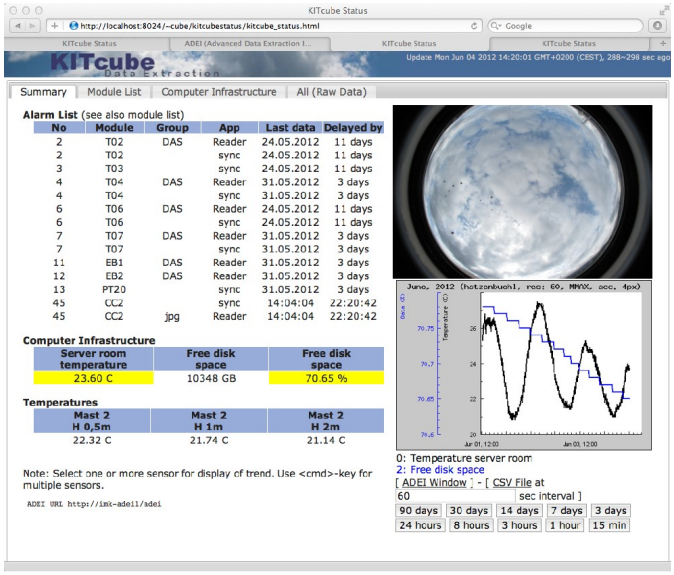
Master Thesis in Computer Science

In KIT, many scientific and engineering facilities demand a fast, configurable and yet versatile status display. Usually, large amount of data are collected from various devices and sensors at frequent rates. To help scientists and engineers in supervising the experiments, a status display provides a quick overview of device operation and the current measurements.

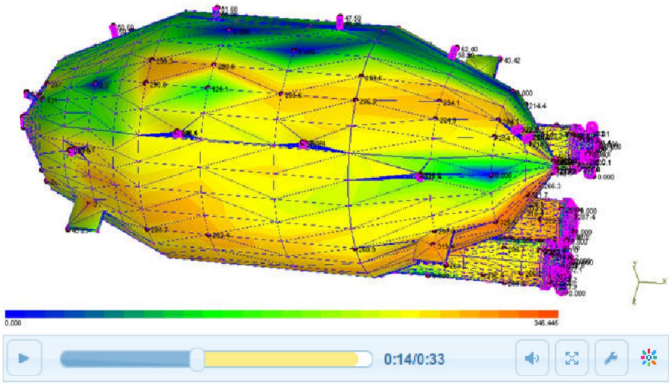
The student is expected to design and implement a web-based platform providing all necessary instruments to quickly build new status displays for a variety of experiments. It should provide rich data visualization capabilities, clean configuration interface, and run across major platforms and browsers. One of the challenges is to automatically adapt to the available display resolution supporting client hardware scaling from small mobile devices to the large visualization stations. Fast and interactive visualization of 2D and 3D data is another emphasis of the project.

Required Skills: The student is expected to be enthusiastic about web application development and command good knowledge of HTML5 and JavaScript. Experiences in popular JavaScript frameworks are welcome but not necessary. Experiences in mobile applications and/or WebCL/WebGL are a plus.

Experience Gained: Web application development; Visualization of scientific data; Data management for large scientific facilities



Status display of a meteorological experiment



3D-heating profile of the KATRIN neutrino experiment

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