



Beat Wolf

Research Areas:

- Computer science
 - Distributed computing
 - User interface development
 - Algorithmics/Optimizations
- Bio-informatics
 - Data analysis pipeline development

How accurate do your models and ideas reveal current changes and how much do they help us predicting upcoming future events?

The field of genetics and in particular diagnostics tries to predict the future health of a person as accurately as possible, making it possible to take medical decisions to improve the patients health. Understanding and modeling this genetic information is a rapidly developing field which is only at its beginning. For certain conditions, the predictive quality of the models based on the individual patient genotype is very high, where as for others very little or nothing is known about the genetic causes. For diagnostics, the current challenge lies in the acquisition of accurate data on which those models are based, as well as integrating the current research in the area to improve the prediction models. My work is centered around improving the acquisition of accurate genetic data in an user-friendly way and integrating it with predictive models that help the geneticists to analyse DNA samples.

Which scientific vision about our challenging future do you have in terms of upcoming problems, models and solutions?

Expanding the current understanding in genetics will require to combine the different research fields in genetics, be it DNA sequencing, transcriptomics or proteomics. While work on this already started, only very little is known about the interaction of genes in general and the consequences of genetic changes on the an organism. While various prediction models exist for the consequences of genetic changes on an individual gene, they only cover a small amount of possible changes. The current interpretation of genetic data is still largely based on the comparison with previously documented cases with the same or similar genotypes. Improving the current models to handle rare cases and undocumented changes is a challenge that will occupy us for many years.