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Identification of model parameters in cloud deployed simulation service

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Identification of parameters is a fundamental part of scientific work within physiology research. The methods to identify systems of complex model are usually based on some simplification and optimization which may deliver the results quickly, but usually some constraints must be followed otherwise these methods may lead to misinterpreted results. Brute-force methods, however, may take too long time and are used usually on small models. To identify parameters of complex models may be time consuming, however, some degree of parallelization can be achieved with optimization methods e.g. genetic algorithm.

We introduce a method where a simulation of a model is distributed into web services accessible via REST interface, each web service is deployed in cloud and can be cloned per request. So the combination of brute-force method with some optimization method can be used also in complex models and estimated time and continuous results can be seen during the computation.

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