Enabling data-driven research with cloud computing

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With the growing size of research data in *solar energy, water and* environment, researchers now need to take the computation and storage limitation into consideration while they explore the mathematical model of their problem in their research. This may seriously affect the accuracy of the research product if the dataset is not large enough. To meet the higher demand of storage, computation and security in research, our group has designed a scalable 11-node cloud computing center. In this cloud computing center, the state-of-the-art research tools, like OpenStack, Spark, Hadoop, Jupyter, Python, Octave and R, have been installed in the server. Two workshops have been held and more than 35 researchers have attended to test the stability and performance of the system. Also, some big data benchmarks have been tested on the platform. All the tests show the system works well even under a relatively high work load.