**References:**

* Kumar, Jitendra & Singh, Ashutosh. (2017). Workload prediction in cloud using artificial neural network and adaptive differential evolution. Future Generation Computer Systems. 81.
* Workload prediction using a basic ANN architecture (input – hidden – output)
* I. K. Kim, W. Wang, Y. Qi and M. Humphrey, "CloudInsight: Utilizing a Council of Experts to Predict Future Cloud Application Workloads," 2018 IEEE 11th International Conference on Cloud Computing (CLOUD), San Francisco, CA, 2018, pp. 41-48.
* Workload prediction using ensemble of : linear regression, SVM, classic timeseries models
* R. N. Calheiros, E. Masoumi, R. Ranjan and R. Buyya, "Workload Prediction Using ARIMA Model and Its Impact on Cloud Applications’ QoS," in IEEE Transactions on Cloud Computing, vol. 3, no. 4, pp. 449-458, 1 Oct.-Dec. 2015.
* Workload prediction using ARIMA model (classic timeseries model)
* H. Mi, H. Wang, G. Yin, Y. Zhou, D. Shi and L. Yuan, "Online Self-Reconfiguration with Performance Guarantee for Energy-Efficient Large-Scale Cloud Computing Data Centers," 2010 IEEE International Conference on Services Computing, Miami, FL, 2010, pp. 514-521.
* Workload prediction using Brown Exponential Smoothing (classic timeseries model)
* Gamboa, John. (2017). Deep Learning for Time-Series Analysis,  Seminar on Collaborative Intelligence in the TU Kaiserslautern. January 2016
* Review of deep learning techniques for time series problems

**Tabel of content**:

## Introduction

## Background

## Related work

## Approach

Original contribution is the application of deep learning algorithms for predicting web service workload. Some selected algorithms: CNN, LSTM, CNN-LSTM hybrid will be trained and compared to classical approaches.

## Validation

The algorithms will be compared to a naive baseline (assume that the workload on time t+1 is equal to t) and to a classic timeseries approach (ARIMA) on a real world dataset: Wikipedia trace.

## Conclusion

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## Future work

Integrate the model with the practical application by using its predictions to scale microservices automatically.