**LITERATURE SURVEY**

# 1)An Empirical Evaluation of Generic Convolutional and Recurrent Networks for Sequence Modeling

[Shaojie Bai](https://arxiv.org/search/cs?searchtype=author&query=Bai%2C+S), [J. Zico Kolter](https://arxiv.org/search/cs?searchtype=author&query=Kolter%2C+J+Z), [Vladlen Koltun](https://arxiv.org/search/cs?searchtype=author&query=Koltun%2C+V)

For most deep learning practitioners, sequence modeling is synonymous with recurrent networks. Yet recent results indicate that convolutional architectures can outperform recurrent networks on tasks such as audio synthesis and machine translation. Given a new sequence modeling task or dataset, which architecture should one use? We conduct a systematic evaluation of generic convolutional and recurrent architectures for sequence modeling. The models are evaluated across a broad range of standard tasks that are commonly used to benchmark recurrent networks. Our results indicate that a simple convolutional architecture outperforms canonical recurrent networks such as LSTMs across a diverse range of tasks and datasets, while demonstrating longer effective memory. We conclude that the common association between sequence modeling and recurrent networks should be reconsidered, and convolutional networks should be regarded as a natural starting point for sequence modeling tasks. To assist related work, we have made code available .

# 2)Toward Reducing Crop Spoilage and Increasing Small Farmer Profits in India: a Simultaneous Hardware and Software Solution

# George H. Chen, Kendall Nowocin, Niraj Marathe

# India's agricultural system has been facing a severe problem of crop wastage. A key contributing factor to this problem is that many small farmers lack access to reliable cold storage that extends crop shelf-life. To avoid having leftover crops that spoil, these farmers often sell their crops at unfavorable low prices. Inevitably, not all crops are sold before spoilage. Even if the farmers have access to cold storage, the farmers may not know how long to hold different crops in cold storage for, which hinges on strategizing over when and where to sell their harvest. In this note, we present progress toward a simultaneous hardware and software solution that aims to help farmers reduce crop spoilage and increase their profits. The hardware is a cost-effective solar-powered refrigerator and control unit. The software refers to a produce price forecasting system, for which we have tested a number of machine learning methods. Note that unlike standard price forecasting tasks such as for stock market data, the produce price data from predominantly rural Indian markets have a large amount of missing values. In developing our two-pronged solution, we are actively working with farmers at two pilot sites in Karnataka and Odisha.

# 3) The Use and Misuse of the Coefficient of Variation in Organizational Demography Research

**AUTHORS** **:*Jessica Snyder Sachs.***

# Demographic heterogeneity is a central theoretical construct in organizational demography research. The most commonly used measure of demographic heterogeneity is the coefficient of variation. The author critically evaluates the rationale for using this measure and shows that the use of the coefficient of variation raises a number of methodological and interpretive problems. Empirical analyses of turnover suggest that using the coefficient of variation may lead to incorrect conclusions about the effects of demographic heterogeneity*.*

# 4) The effect of body size on the rate of decomposition in a temperate region of South Africa

**AUTHORS** :**A Sutherland, J Myburgh, M Steyn**

Forensic anthropologists rely on the state of decomposition of a body to estimate the post-mortem-interval (PMI) which provides information about the natural events and environmental forces that could have affected the remains after death. Various factors are known to influence the rate of decomposition, among them temperature, rainfall and exposure of the body. However, conflicting reports appear in the literature on the effect of body size on the rate of decay. The aim of this project was to compare decomposition rates of large pigs (Sus scrofa; 60-90 kg), with that of small pigs (<35 kg), to assess the influence of body size on decomposition rates. For the decomposition rates of small pigs, 15 piglets were assessed three times per week over a period of three months during spring and early summer. Data collection was conducted until complete skeletonization occurred. Stages of decomposition were scored according to separate categories for each anatomical region, and the point values for each region were added to determine the total body score (TBS), which represents the overall stage of decomposition for each pig. For the large pigs, data of 15 pigs were used. Scatter plots illustrating the relationships between TBS and PMI as well as TBS and accumulated degree days (ADD) were used to assess the pattern of decomposition and to compare decomposition rates between small and large pigs. Results indicated that rapid decomposition occurs during the early stages of decomposition for both samples. Large pigs showed a plateau phase in the course of advanced stages of decomposition, during which decomposition was minimal. A similar, but much shorter plateau was reached by small pigs of >20 kg at a PMI of 20-25 days, after which decomposition commenced swiftly. This was in contrast to the small pigs of <20 kg, which showed no plateau phase and their decomposition rates were swift throughout the duration of the study. Overall, small pigs decomposed 2.82 times faster than large pigs, indicating that body size does have an effect on the rate of decomposition..

# 5)Deep Gaussian Process for Crop Yield Prediction Based on Remote Sensing Data

**AUTHORS**: Mary S Megyesi 1, Stephen P Nawrocki, Neal H Haskell

Agricultural monitoring, in particular in developing countries, can help prevent famine and support humanitarian efforts. A central challenge is yield estimation, which is to predict crop yields before harvesting. We introduce a scalable, accurate, and inexpensive method to predict crop yields using publicly available remote sensing data. Our approach improves existing techniques in three ways. First, we forego hand-crafted features traditionally used in the remote sensing community and propose an approach based on modern representation learning ideas. We introduce a novel dimensionality reduction technique that allows us to train a Convolutional Neural Network or Long Short Term Memory and automatically learn useful features even when labeled training data is scarce. Finally, we incorporate a Gaussian Process component to explicitly model the spatio-temporal structure of the data and further improve the accuracy. We evaluate our approach on county-level soybean production in the U.S. and show that our approach vastly outperforms competing techniques.Collapse