



# Semi-Structured Deep Distributional Learning

David Rügamer

(Department of Statistics, LMU Munich)

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Department of Statistics, Ludwigstr. 33, Room 144

We propose a unifying network architecture for deep distributional learning in which entire distributions can be learned in a general framework of regression models and deep neural networks. Previous approaches that try to combine advanced statistical models and deep neural networks embed the neural network part as a predictor in an additive regression model. In contrast, our approach estimates the statistical model part within a unifying neural network by projecting the deep learning model part into the orthogonal complement of the regression model predictor. This facilitates both estimation and interpretability in high-dimensional settings.