**Urban growth prediction, Austin, TX 2029.**

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**INTRODUCTION**

This is a report to predict 2029 urban growth rate and patterns of Austin, TX.

current populations and economic development rate, it is at most important to understand

these trends in order to efficiently beforehand work towards planning allocation of resources, budgets and infrastructure. These predictions are come very handy not only to planners, but also to residents, industries, economics locally but also outside of the region,

Urban growth is a spatial process which has a significant impact on the earth’s environment. Research on predicting this complex process makes it therefore especially fruitful for decision-making on a global scale, as it enables the introduction of more sustainable urban development. This article presents a novel method of urban growth prediction. The method utilizes geospatial semantics in order to predict urban growth for a set of random areas in Europe. For this purpose, a feature space representing geospatial configurations was introduced which embeds semantic information. Data in this feature space was then used to perform deep learning, which ultimately enables the prediction of urban growth with high accuracy. The final results reveal that geospatial semantics hold great potential for spatial prediction tasks.

Spatial predictions are identified as essential to forecast and ultimately manage global as well as regional changes, in order to improve the sustainability (UNWCED, 1987) of urban development (Oktay, 2015), for example preventing urban sprawl at a global scale (Craglia et al., 2012; Goodchild, 2008; Goodchild et al., 2012). Urban growth prediction is an essential type of spatio-temporal prediction in order to model and ultimately minimize urban sprawl (Johnson, 2001). Urban sprawl is defined as a global challenge and a complex phenomenon which has severe environmental, social, and economic consequences and therefore requires sound urban development strategies (Johnson, 2001; OECD, 2018). As such, urban growth predictions have an essential role in providing optimal solutions for impact assessment of potential scenarios in urban and non-urban development and corresponding planning policies (Herold, Goldstein, & Clarke, 2003). Urban growth is a highly complex spatial process which is influenced by a series of nonlinear factors such as temporal agglomerations and irregular flows of population and economy (Batty, 2008). Urban growth prediction therefore is a complicated task, as it requires one to identify the relevant factors but also to model them accordingly. This article presents a novel method of urban growth prediction which utilizes geospatial semantics in order to model urban structures and subsequently predict urban growth. As a result, it reveals the promising potential of using geospatial semantics for the purpose of spatial predictions.

PROCESS & RESULTS

We first use the land use data