Título: **A novel approach to approximate crime hotspots to the road network**

Data: **16/10/2019**

Horário: **11:00h**

Local: **Sala de Seminários - Bloco 952**

Resumo:

Crimes (e.g., assault, arson, harassment, and murder) have emerged as one of the most critical problems countries face. In particular, in Brazil, crime is a theme of growing interest and the prime concern in some cities, due to the high crime rates, the sheer magnitude ofviolence and the perceived number of lives lost. In this paper, we aim at predicting crimes in each region of a city before they happen and efficiently identify where target police resources that will be used to prevent the crimes from occurring. A relevant amount of approaches available in the literature address this problem by suggesting that Kernel Density Estimation (KDE) can accurately forecast crime and outperform other approaches for crime prediction. However, none of these approaches approximate the crime hotspots to the road network by considering that the police patrols move constrained by road networks. Besides, none of these approaches propose

incrementally discovery of crime hotspots in a life-long manner. This work proposes PHAR (stands for Polygon Hotspots Approximated to Road network), a batch KDE algorithm-based that outputs the crime hotspots approximated to the road network and helps to allocate police patrols to forestall new crimes to come up. Another contribution is an algorithm i-PHAR that incrementally updates the previous KDE computation according to the new streams of crime occurrences reported. Indeed, this can accelerate the crime hotspots detection since there is no need to compute the KDE algorithm from cratch for new streams of data. In the experimental evaluation, conducted on a real-world dataset, we demonstrate the validity of PHAR and i-PHAR with respect to the state-of-the-art available in theliterature in terms of quality of results.

Banca:

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