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I-MOVE: A new method to determine the optimal pedestrian itineraries and maximize its health capital throughout its journey

Gilles Maignant
French National Center for Research, France

Urban air pollution is traditionally estimated by using techniques based on geostatistical methods, such as interpolation applied to a set of data stemming from measures of pollution's stations. Now very often, these stations are in insufficient number or do not measure the same pollutants to allow mapping finely dispersion of air pollution through urban spaces. We proposed a new method to estimate the concentrations at a fine scale which combines modelization and monitoring. A pedestrian route consists of bows (streets, boulevards etc.), crossed in any sense or direction and from which the rate of pollution differs between every artery according the car traffic, local climatic conditions and of the surrounding urban morphology. By coupling spatiotemporal 3D modeling of air pollution (Eulerian models and Navier-Stockes equations) and individual vulnerability of persons (divided in three classes: from low vulnerability to high vulnerability), we propose optimal pedestrian routes with personalized path to maximize the health capital (combined exposures), using multi criteria analysis (health, length in meters, duration of removal). This methodology is now developed in PC interface but will be transforming in a smartphone application and available for each connected citizen.

maignant@unice.fr