

Decision Support for Route Planning to Reduce Heat Stress Considering the Time of the Day

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Heat stress is a serious risk, in particular for certain groups like elderly or patients with multiple sclerosis or heart disease. Certain developments like the ageing of society, the increasing urbanisation (urban heat island effect) and the climate change are increasing the risk that people are affected by heat stress.

Therefore we are presenting two approaches that can help people to reduce the risk of heat stress in their everyday life, e.g. when they go shopping in a supermarket or pharmacy. Our first approach is a tool that helps to find a route with a minimal heat exposure. The second approach we're proposing is a tool that supports the user to select the point in time, with a minimal risk of heat stress, considering e.g. the opening hours of a shop.

Our results are showing that both approaches are able to reduce the heat exposure and therefore can help people to decrease the risk of heat stress in their everyday life.

1 Story

- Motivation
 - heat is critical for humans
 - particular problems for risk groups (illness, old, etc)
 - walking to areas often done action in particular to typical locations (shopping, health care, etc)
 - those actions have to be done
- Problem definition
 - how to minimize the impact of heat stress on walking paths?
 - subdivided into:

- * for a given route?
- * When and how to walk typical routes, e.g. pharmacy, doctor
- method:
 - Goal of this paper: We want to provide a routing method to minimize the heat stress of typical walking actions
 - We do so by providing a value function for heat stress which can be used in route planning
- Evaluation:
 - Our data set
 - Evaluation 1 on routes given date in time. (pure routing approach) and its metrics
 - Evaluation 2: producing queries for typical walking tasks (our selection) and their evaluation
 - implementation as a demonstrator is produced and available at *homepage*
- Conclusion and contribution

2 Introduction

(Dijkstra 1959)

References

Dijkstra, E. W. (1959). “A note on two problems in connexion with graphs”. In: *Numerische Mathematik* 1.1, pp. 269–271. ISSN: 0029-599X, 0945-3245. DOI: 10.1007/BF01386390. URL: <http://link.springer.com/article/10.1007/BF01386390> (visited on 04/07/2016).