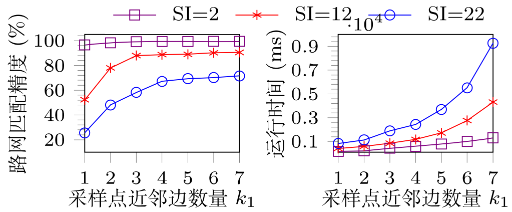
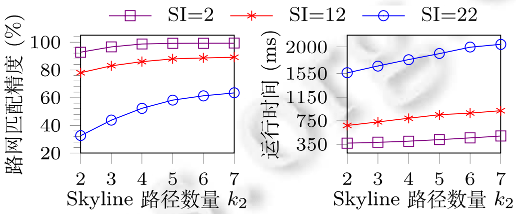
图 9(b)表明,与 k_2 相比,求解 Skyline 路径与距离远近对运行时间影响更大,采样率越低,距离就越远,求解 Skyline 路径需要的计算量也就越多,而增加 k_2 主要影响全局匹配的动态规划算法运行效率.



(a) 路网匹配精度 (b) 运行时间

Fig.8 Effect of varying k_1

图 8 改变变量 k_1 的效果



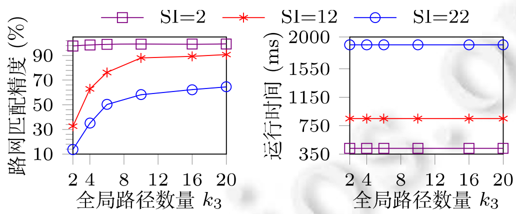
(a) 路网匹配精度 (b) 运行时间

Fig.9 Effect of varying k_2

图 9 改变变量 k_2 的效果

- 全局路径数量效果

如图 10(a)所示,随着全局路径数量 k_3 增加,路网匹配精度都有所提升,采样率越低,路网匹配精度提高越明显.当 k_3 从 2 增大到 10 时,路网匹配精确度也在逐步提高;但当 k_3 超过 10 时,路网匹配精确度就不再有所增加.这主要是由于足够大的 k_3 值,已经可以覆盖轨迹的实际路径.而图 10(b)表明,随着 k_3 的增大,各采样率轨迹路网匹配运行时间都有所增长,采样率越高,轨迹的路网匹配运行时间受 k_3 影响越大;采样率越低,影响越小.这主要是由于等距离的轨迹,高采样轨迹点较多,使得动态规划中出现较多阶段;而低采样轨迹阶段较少,且在同阶段中局部边数量固定,则较多阶段比较少阶段受到 k_3 的影响要大.



(a) 路网匹配精度 (b) 运行时间

Fig.10 Effect of varying k_3

图 10 改变变量 k_3 的效果

6 结 论

本文提出了在多属性动态网络中低采样轨迹路网匹配的问题,考虑到不同用户选择路径时的个性化差异,我们构造了基于用户驾驶偏好的低采样轨迹个性化路网匹配算法,通过从历史高采样轨迹中学习到的驾驶偏好来指导低采样轨迹的路网匹配.在驾驶偏好提取和路网匹配过程中,采用多目标优化思想查找局部 Skyline 路

径作为局部匹配的候选路径.该方法在采样时间间隔为 20min 时也能保证路网匹配精度在 65%以上.我们基于真实数据集做了充分实验,实验结果表明,该方法是有效和高效的.在将来的工作中,我们着重考虑道路交通网络边的动态属性服从一定概率分布的情形,并在用户驾驶偏好模型中引入不确定性和动态性,从而提高路网匹配的精度,并设计更加高效的算法,提高路网匹配运行效率.

致谢 感谢各位审稿专家,他们给出的意见和建议对提高本文质量起到了关键作用.在此,我们也向对本文工作给予支持和帮助的老师和同学表示感谢.

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