

# A parallel GPU-based approach for reporting flock patterns

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Data analysis and knowledge discovery in trajectory databases is an emerging field with a growing number of applications such as managing traffic, planning tourism infrastructures or better understanding wildlife. In this paper, we study the problem of finding flock patterns in trajectory databases. A flock refers to a large enough subset of entities that move close to each other for, at least, a given time interval. We present parallel algorithms, to be run on a *Graphics Processing Unit*, for reporting three different variants of the flock pattern: (1) all maximal flocks, (2) the largest flock and (3) the longest flock. We also

provide their complexity analysis together with experimental results showing the efficiency and scalability of our approach.