Informatica – Revision2

A preliminary version of this paper appears in []. Besides a significant revision effort for improving the clarity, formality and preciseness we also add new substantial elements to this full version. That is we reshape and adjust some important parts in our proposed algorithm and thus make it more efficient; as a result, we redo the evaluation task but in a larger scale for obtaining a more insightful about the performance of our algorithm. Below we briefly mention the most important adjustments. In section 2.1, for the task of detecting a hole boundary we justify our decision to choose the approach used in [10] over the one in [25]. In section 2.2 we optimize the way we define and use Bitmap Presentation for reducing incurred communication overhead and delay. In 2.3 we tune the process of forwarding the hole boundary info towards the sink(s): the pivots fully involve in this process that increases the efficiency of the whole mechanism.

Compared to the previous version, moreover, we also extend our evaluation work to a significant deeper level where we redesign a new, significant larger set of simulation scenarios, inspired by new observations and thus obtain new findings. Most notably, our 3 main simulation settings (for studying the effects of 3 system parameters: Dead Node Threshold, Notification Threshold & Report Threshold) are all extended by our deployment of two different scripts of a hole expanding (we deployed just one script in the previous work), which are called Fast Expansion and Slow Expansion. We focus more on the Fast Expansion scheme (a hole expands fast for simulating a forest fire) and we identify some value region of Dead Node Threshold that could optimize our algorithm. We also extend our study on these main parameters with some initial consideration of the relationship with another variable: the grid cell size. In spite of this rather extensive evaluation analysis there still remain many unknowns that can be challenging enough for good results in future work (we still think of this work as an initial effort of a long way to go).

1)

DNT on DRE, AR by FE/SE

DNT = 1.3x near optimum for FE

2) NTT for AR, CE

Cell size ?