Report on the paper:

Degree-constrained minimum spanning hierarchies in graphs

by **Miklos Molnar**

The standard of much of the explanation of the paper is not of the standard I would expect in a journal paper. The problem is not in the English (I have only a few minor points), but in the way concepts are dealt with. I imagine that those who have worked on closely related problems would understand most of the paper, but the average reader of *Algorithms* would struggle. I have no reason to think that anything major in the paper is incorrect.

It could take a long time to cover everything, so I will concentrate mainly on the early part of the paper.

I have no problem with the Abstract or Section 1. In Section 2 it would be helpful in Figure 1 to add arrows to the arcs indicating the mapping, and to expand the caption to explain more clearly what is being shown, and what the various solid dots and dashes are indicating. The figure is really helpful to illustrate the concept of a hierarchy.

In Section 3 the Definition 3 is a little vague (instantaneous, respected for each visit) and could be presented more formally. Again, Figure 2 is helpful to illustrate this, but the caption should be expanded to explain what is being shown and what the numbers represent.

I have no particular problem with Section 4.

In subsection 5.1 the author assumes that the reader will know what an "image" is in this context. Again in Figure 5 the caption needs to be expanded to explain what is being shown, and the various steps in Section 5 should be linked more closely to the illustration in this figure.

It it is not immediately clear how the four points in 5.1.1 link to Theorem 1 or its preceeding lemmas. Each point should be linked to the appropriate lemma to aid the reader.

Section 5.1.1 is not at all clear. It is not at all clear how the flow is found. What does"one flow to each destination from s" mean exactly? Is Figure 5c meant to be showing a flow? Only two solid arcs have values indicated. Almost all of 5.1.3 and 5.1.4 is rather obscure. I can almost see what is going on from Figure 5, but is is difficult to link it to the rest of the explanation. Almost all of Section 5.1 needs a careful rewriting. Many of the statements made seem rather disjointed and unexplained.

lines 344, 347 Should be upper bound not lower bound? (See Table 1), (and all but first two entries in last column of Table 2 ??).

Similar comments can be made about the presentation of the Heuristic and the Approximations.

Minor points

line 1 Minimum spanning tree problem → The minimum spanning tree problem

Several acronyms are used in the paper: (DCMST, DCMSH, APX, MSTSL etc.). It would help the reader if the list of notation were complemented by a list of acronyms.

line 268 Eventual simplifications → Simplifications.

line 270 Be more specific about the meaning of "useless".

line 434 If there are a few numbers of nodes → If there are only a small number of nodes