

Wasim Shoman<sup>1\*</sup> and Fatih Gulgen<sup>2</sup>

<sup>1</sup> Istanbul Technical University, Maslak, Istanbul, Turkey

<sup>2</sup> Yildiz Technical University, Maslak, Istanbul, Turkey

## Abstract

This paper presents a methodology to extract a new hierarchy for effectively generalize and label street features in intermediate multi scale street networks. The hierarchy uses two main parameters as criteria for ordering the street features; their centrality measures, i.e., betweenness, reach, straightness and closeness, and their functional classes attribute. The measures are integrated using fuzzy-AHP to yield proper coefficients in the hierarchy creation process. The hierarchy is applied for the thinning process to reduce the complexity of the network. Later, the proposed hierarchy is implemented as a priority value to label street features in intermediate scales.

Weight of the street feature =

normalized bet. value of the feature  $\times 0.5223$  +  
normalized reach value of the feature  $\times 0.3252$  +  
normalized str. value of the feature  $\times 0.1129$  +  
normalized clos. value of the feature  $\times 0.0396$

(1)

STREETLIST	Reach no	Class_nor	Between_n	Straigh_n	Priority	Class	Hierarchy
187142	0.000104	0.00000015	0.000442	0.000108	0.027702	1	9501
150182	0.000107	0.00000018	0.0004	0.000106	0.025664	1	9500
150182	0.000107	0.00000018	0.000394	0.000105	0.025553	1	9599
122484	0	0.00091028	0	0	0.023406	1	9598
187142	0.000104	0.00000016	0.000354	0.00011	0.023099	1	9597
122484	0	0.00080009	0	0	0.022901	1	9596
187142	0.000104	0.00000016	0.000352	0.000109	0.022889	1	9595
187142	0.000104	0.00000016	0.00035	0.000109	0.022879	1	9594
187142	0.000104	0.00000015	0.000348	0.000109	0.022796	1	9593
150182	0.000107	0.00000018	0.000348	0.000106	0.022735	1	9592
150182	0.000107	0.00000018	0.000343	0.000103	0.022575	1	9591
150182	0.000107	0.00000018	0.000342	0.000104	0.022489	1	9590
150182	0.000107	0.00000018	0.000341	0.000102	0.022484	1	9589
150182	0.000107	0.00000018	0.000341	0.000102	0.022423	1	9588
122484	0	0.00398108	0	0	0.015766	1	9587
122484	0	0.00398474	0	0	0.015464	1	9586
122484	0	0.00398012	0	0	0.015445	1	9585
122484	0	0.00383992	0	0	0.015207	1	9584
130539	0.000108	0.00000014	0.000179	0.000105	0.013983	1	9583
188781	0.000103	0.00000013	0.000176	0.000102	0.013896	1	9582
195235	0.000107	0.00000014	0.000154	0.000107	0.01272	1	9581
141192	0.000104	0.00000015	0.000153	0.000106	0.012549	1	9580
195235	0.000107	0.00000014	0.000144	0.000107	0.0121	1	9579
141192	0.000104	0.00000015	0.000142	0.000107	0.012007	1	9578
127556	0.000104	0.00000016	0.00014	0.000109	0.011924	1	9577
189422	0.000105	0.00000014	0.000113	0.000103	0.010462	1	9576
189422	0.000101	0.00000015	0.000111	0.000104	0.01024	1	9575
189422	0.000103	0.00000016	0.000105	0.000107	0.010052	1	9574
120448	0.000107	0.00000014	0.000105	0.000095	0.010048	1	9573
189422	0.000101	0.00000015	0.000107	0.000103	0.010035	1	9572
151159	0.000101	0.00000015	0.000107	0.0001	0.009987	1	9571
189399	0.000107	0.00000014	0.000102	0.000094	0.009886	1	9570

