

**Supplementary file for “Enhancing Explainability of Road Accident Hotspots by Visual and Language Concept Discovery”**

**I. CLIP-SqueezeNet configuration of VisText-Net:**

1) Top ten percentile (26 text-concepts) weights of  $\mathcal{N}_{train}^H$

Text-concepts	Weights of $\mathcal{N}_{train}^H$
'flyover'	0.101392
'turquoise'	0.098778
'composite'	0.098483
'destinations'	0.096879
'turn restriction'	0.096529
'stoplight'	0.095008
'icy'	0.094825
'splitter island'	0.094601
'infrastructure'	0.094236
'off-white'	0.094073
'highway'	0.093965
'emergency lane'	0.093234
'navigate'	0.093223
'magenta'	0.092844
'road narrowing'	0.092726
'broadway'	0.092725
'bus lane'	0.092721
'intersection'	0.092642
'corrugated'	0.092061
'railing'	0.091924
'townhouse'	0.09187
'tunnels'	0.091438
'zebra-striped'	0.091069
'sewer'	0.090781
'ATM'	0.090738
'freeway'	0.090454

2) Top ten percentile (26 text-concepts) weights of  $\mathcal{N}_{train}^{NH}$

Text-concepts	Weights of $\mathcal{N}_{train}^{NH}$
'flyover'	0.104348
'turquoise'	0.100401
'composite'	0.100272
'destinations'	0.099426
'stoplight'	0.097224
'navigate'	0.096801

'emergency lane'	0.09648
'turn restriction'	0.096366
'highway'	0.095893
'icy'	0.095848
'infrastructure'	0.09553
'splitter island'	0.095252
'off-white'	0.095032
'railing'	0.094652
'magenta'	0.094347
'road narrowing'	0.094302
'bus lane'	0.094108
'townhouse'	0.093947
'zebra-striped'	0.093924
'corrugated'	0.093745
'tunnels'	0.093397
'broadway'	0.093374
'intersection'	0.09331
'sewer'	0.093183
'underpass'	0.093027
'rocky'	0.092407

3) Top ten percentile (26 text-concepts): (Weights of  $\mathcal{N}_{\text{train}}^{\text{NH}}$  - Weights of  $\mathcal{N}_{\text{train}}^{\text{H}}$ )\*100

Text-concepts	(Weights of $\mathcal{N}_{\text{train}}^{\text{NH}}$ - Weights of $\mathcal{N}_{\text{train}}^{\text{H}}$ )*100
'peeling'	0.520201349
'chicane'	0.371701415
'wooden planks'	0.367000273
'navigate'	0.357799953
'white'	0.356401866
'directions'	0.331999092
'emergency lane'	0.324600684
'construction cones'	0.322599835
'bike lane'	0.311400341
'underpass'	0.305699996
'freshly paved'	0.300998973
'construction barrier'	0.298698948
'corners'	0.297699924
'flyover'	0.296005936
'street bench'	0.288097951
'zebra-striped'	0.285501523
'nylon'	0.281098328
'curb extension'	0.277700691

'crosswalk signal'	0.275899085
'crosswalk button'	0.273899763
'railing'	0.272800196
'vineyards'	0.256399731
'destinations'	0.254699253
'PVC'	0.252499198
'flashing arrow'	0.247498531
'rocky'	0.24389969

4) Top ten percentile (Weights of  $\mathcal{N}_{train}^H$  – Weights of  $\mathcal{N}_{train}^{NH}$  ) \* 100 text-concepts

Text-concepts	(Weights of $\mathcal{N}_{train}^H$ – Weights of $\mathcal{N}_{train}^{NH}$ ) * 100
'speed bump'	0.789195021
'cloverleaf interchange'	0.74049609
'aggregate concrete'	0.518798479
'school entrance'	0.506604732
'debris-strewn'	0.505496058
'pedestrian signal'	0.49059814
'urethane foam'	0.48799824
'roof rack'	0.468896319
'recycled glass'	0.458798585
'bus terminus'	0.454297975
'recycling bin'	0.441800622
'bituminous asphalt'	0.43770261
'portable toilet'	0.437303736
'weigh station'	0.437299846
'service area'	0.437003511
'limestone'	0.434396256
'thermoplastic road markings'	0.427599886
'synthetic resin'	0.426099511
'taxi stand'	0.425796848
'soda machine'	0.425097537
'cast iron'	0.421996566
'bike rack'	0.421203292
'alloy'	0.415801867
'polished concrete'	0.414299037
'road shoulder'	0.410595896
'steel plating'	0.409296565

## II. CLIP-DenseNet configuration of VisText-Net:

- 1) Top ten percentile (26 text-concepts) weights of  $\mathcal{N}_{train}^H$

Text-concepts	Weights of $\mathcal{N}_{train}^H$
'roadside'	0.118003
'taxi stand'	0.116599
'ochre'	0.115979
'railways'	0.115221
'stained road'	0.114322
'crushed stone'	0.113497
'payphone'	0.112718
'roadway'	0.112377
'airport access road'	0.111427
'roundabout'	0.111047
'railroad'	0.110895
'bus terminus'	0.110656
'school entrance'	0.110643
'bus stop'	0.110458
'pockmarked'	0.110228
'signal light'	0.110203
'avenue'	0.110172
'debris-strewn'	0.110042
'detour dirt'	0.110013
'bus depot'	0.109882
'roundabout island'	0.109691
'pavement stone'	0.109658
'parking meter'	0.10943
'elevated railway'	0.109414
'safety checkpoint'	0.109318
'streetlight base'	0.108979

- 2) Top ten percentile (26 text-concepts) weights of  $\mathcal{N}_{train}^{NH}$

Text-concepts	Weights of $\mathcal{N}_{train}^{NH}$
'roadside'	0.117273
'ochre'	0.115469
'taxi stand'	0.115372
'railways'	0.114732
'stained road'	0.11371
'crushed stone'	0.112739
'payphone'	0.112406

'roadway'	0.112358
'airport access road'	0.111575
'school entrance'	0.110278
'roundabout'	0.11027
'railroad'	0.110047
'avenue'	0.109987
'detour dirt'	0.109905
'debris-strewn'	0.10989
'bus stop'	0.109808
'bus terminus'	0.109673
'pockmarked'	0.109616
'signal light'	0.109577
'pavement stone'	0.109544
'bus depot'	0.109413
'elevated railway'	0.109411
'roundabout island'	0.109184
'safety checkpoint'	0.108703
'bituminous asphalt'	0.108675
'streetlight base'	0.108535

3) Top ten percentile (26 text-concepts): (Weights of  $\mathcal{N}_{\text{train}}^{\text{NH}}$  - Weights of  $\mathcal{N}_{\text{train}}^{\text{H}}$ )\*100

Text-concepts	(Weights of $\mathcal{N}_{\text{train}}^{\text{NH}}$ - Weights of $\mathcal{N}_{\text{train}}^{\text{H}}$ )*100
'packed snow'	0.005989112
'trees'	0.005118892
'billboard'	0.004999723
'magenta'	0.004605345
'soft pink'	0.004505521
'townhouse'	0.004410764
'wet'	0.004386725
'maroon'	0.004207743
'neon'	0.004138108
'coarse'	0.00412317
'composite decking'	0.004068144
'aqua'	0.004064603
'cone'	0.003899066
'coastline'	0.003888097
'corners'	0.003879372
'lane'	0.003850484
'weatherproof coating'	0.003840074
'transformer'	0.003775874
'consulate'	0.003775818

'icy'	0.00372418
'taupe'	0.003685834
'acrylic glass'	0.003665596
'polycarbonate'	0.003574757
'villages'	0.003542019
'UV-resistant glass'	0.003476504
'yellow'	0.003409062

4) Top ten percentile (26 text-concepts): (Weights of  $\mathcal{N}_{train}^H$  – Weights of  $\mathcal{N}_{train}^{NH}$  ) \* 100

Text-concepts	(Weights of $\mathcal{N}_{train}^H$ – Weights of $\mathcal{N}_{train}^{NH}$ ) * 100
'polycarbonate sheeting'	0.005648926
'cloverleaf interchange'	0.005108029
'blinking intersection'	0.004780911
'thermoplastic road markings'	0.003880039
'interchange'	0.003385901
'composite panels'	0.001662765
'pedestrian refuge'	0.001391523
'taxi stand'	0.001227371
'heavy snow cover'	0.001154248
'double-glazed glass'	0.001144994
'portable toilet'	0.001126066
'parking meter'	0.001059204
'eroded'	0.001012184
'bus terminus'	0.000983141
'pathway'	0.000982508
'potholed'	0.00091517
'traffic island'	0.000887677
'railroad'	0.000848383
'yield sign'	0.000843145
'refuge island'	0.000841476
'jet black'	0.000838604
'fountain'	0.000811279
'pedestrian crossing'	0.000806592
'roundabout'	0.000776991
'access road'	0.000773251
'crushed stone'	0.000757329