

TC304 Student Contest on Data Analytics Applied to 304dB

(August 17-18 2018, Harbin, China)

Question:

Considering the following site investigation dataset from a clay site. Each row represents the data from a certain depth. The dataset is manipulated in the way that several numbers in the table are replaced by outliers with various degrees of departure from the norm.

LI	σ'_v (kPa)	σ'_p (kPa)	s_u^{re} (kPa)	s_u (kPa)
0.98	3.7	13.87	0.88	5.95
1.31	7.4	12.95	0.59	4.29
1.78	13.87	9.25	0.39	4.07
1.51	17.57	17.57	0.39	5
1.31	21.27	45.12	0.39	5.95
1.34	24.05	21.27	0.59	6.43
1.63	27.75	24.05	0.39	7.62
1.42	31.45	24.97	0.68	16.74
2.52	35.14	29.6	0.68	7.86
1.27	39.77	29.6	0.78	12.38
1.21	44.39	30.52	0.88	13.1
1.38	49.02	36.07	0.98	13.81
1.45	51.79	55.49	1.18	17.38
1.51	58.27	60.12	1.37	13.1
1.22	61.97	48.09	0.98	18.57
1.18	66.59	72.14	0.88	17.14
0.93	71.21	97.11	1.18	26.19

LI = liquidity index; σ'_v = vertical effective stress; σ'_p = preconsolidation stress; s_u^{re} = remolded undrained shear strength; s_u = undrained shear strength.

Find the outliers using data analytics methods (e.g., statistics, probability, machine learning, data mining, etc.). Please present clearly the criteria, methods, and algorithms of detecting those outliers.

Other information

The participants in the TC304 Student Contest session are required to:

- (1) Submit a full length paper (it will not be formally published) in English. Academic staffs (e.g., professors) cannot be listed as co-authors, although they can be mentioned in acknowledgements.
- (2) Present the research findings during the session (10 minutes presentation plus 5 minutes Q&A).

A TC304 committee will review the papers/presentations and select the winner of the ISSMGE TC304 Student Contest Award. An award certificate will be given to the winner during the conference.

Important dates:

- July 31 2018: Submission of full length paper
- August 17-18 2018: TC304 Student Contest