Development of SPT-N and Correlated Shear Wave Velocity Profiles Database for Pakistan

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This study spearheads efforts to develop a Pakistan-centered comprehensive and open-access SPT-N and correlated Vs profiles database. The initiative aims to create an impactful Vs profile repository that ensures the accurate prediction of ground motion acceleration during an earthquake. The database is built on specific entry requirements, such as in-situ SPT-N measurements, precise location data through geodetic coordinates and elevation, and additional information on geotechnical logs, penetration resistance data, and groundwater tables. A suite of SPT-N and Vs correlations are selected from the literature to develop corresponding Vs profiles. These data inclusions enhance the overall database and make it suitable for complex site response analysis across all the provinces of Pakistan. About 350 profiles have already been collected as part of the study, and a data model prototype has been developed to ensure efficient data storing, processing, and retrieval. A web-based interactive platform with downloadable SPT-N and Vs profiles and additional data will be established to create an ultimate database. The project serves to update the geotechnical and earthquake engineering community. It will become a vital source for open-access VS profile databases and potentially influencing seismic hazard mitigation strategies in Pakistan and beyond and becoming a valuable resource for researchers.