Pile foundations - settlement driven bearing capacity calculation

Graduation assignment

CRUX is a leading independent consulting firm in the field of geotechnical engineering, geohydrology and environmental remediation.
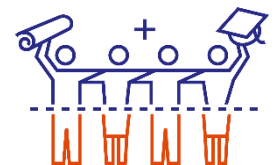
Through our intensive cooperation with our sister companies BouwRisk (monitoring) and CEMS (engineering microservices), we are able to provide innovative, (geo)technical design solutions for all subsurface issues.

At CEMS we are continuously pushing the boundaries of automation in engineering pipelines. We develop cloud-based software in Python. One of the software packages is PileCore and is used to calculate the static bearing capacity of a pile foundation and determines the optimal pile groups based on the ksi-factor. One of the challenges we face lies in the automatic determination of the negative friction zone for pile foundation calculations, based on CPT data. Our current rule-based algorithm for this task is often too conservative, forcing undesired manual analysis.

Your assignment is to develop a reliable and robust method in Python to determine the negative soil friction zone of a CPT, taking into account the (long term) settlements and stress interaction of the pile and the soil. This method will, after an extensive validation, be implemented in PileCore.

Looking for another assignment or internship? Contact us and ask about the opportunities.

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