Postdoctoral Opening in Landslide Geomechanics

Research Topic: **Defining ground failure precursors through geomechanics and remote sensing**

This project is inspired by the idea that the fate of landslides is encoded in the spatiotemporal patterns of pre-failure deformations. As a result, it aims to identify the rheological signature hidden in the time series of remotely sensed data, so to explain the causes of ground failure. Specifically, the project aims to formulate: (i) constitutive laws for geomaterials explaining changes in the rate of ground deformation; (ii) mechanics-based criteria to identify precursors marking the transition from slow to rapid ground movements, including analytical approaches to define the triggering of localized (e.g., slip surface formation) and diffuse instabilities (e.g., sand liquefaction); (iii) a landscape-scale simulation platform reproducing the growth of failure zones in response to rainfall inputs.

Position Description

The selected candidate will join the Geomechanical Modeling group at Northwestern University, working under the supervision of Prof. Giuseppe Buscarnera. The position involves a one-year appointment, with the possibility of a contract extension after this period. The selected candidate is expected to implement advanced constitutive laws and conduct numerical analyses with a variety of computational techniques (e.g., FEM, MPM). The goal of the project will be to explore cross-scale interactions and coupled processes involving particles and pore fluids of geomaterials, as well as their influence at larger length scales. Competitive salary, exposure to a dynamic international environment, and opportunities for professional development will be essential elements of the employment conditions.

Selection Criteria

- PhD in Geomechanics, Mechanics, Applied Mathematics, Physics, or related fields.
- Excellent computational and programming skills.
- Expertise in relevant computational methods (e.g., FEM, MPM).
- Excellent knowledge of continuum mechanics and familiarity with constitutive modeling.
- Ability to work independently.
- Excellent communication skills.
- Ability to work in multi-disciplinary teams. Co-supervision of Ph.D. students is expected.

How to Submit Your Application

Please, forward a single PDF consisting of a 1-page cover letter, a curriculum vitae, contacts of two references and two representative publications to Prof. Giuseppe Buscarnera (g-buscarnera(at)northwestern.edu). For additional information you can contact the above email address or visit the website http://www.civil.northwestern.edu/people/buscarnera/.

Selection Process

Review of candidates will begin May 17th, 2021. Applications will be accepted until the position is filled.