**Postdoctoral Position in Numerical Simulations of Landslides with the Material Point Method**

Aalto University is a community of bold thinkers where science and art meet technology and business. Aalto University has six schools with nearly 20 000 students and 4 700 employees, 390 of which are professors. Our campuses are located in Espoo and Helsinki, Finland.

School of Engineering is an international unit with nearly 70 talented professors and 3400 full-time students. Currently, the department of Civil Engineering has 19 professors together with lecturers, post-doctoral researchers, doctoral students, and technical staff. In total, the number of personnel is about 110.

The Department of Civil Engineering is seeking an outstanding postdoctoral researcher who is interested in modelling of landslides with the material point method. For more information of the research and teaching at the department, please check http://civileng.aalto.fi/en/. More information on the current research in the Prof. Sołowski group can be found at https://people.aalto.fi/index.html#wojciech\_solowski and at http://solowski.info . Group publications can be found at: https://research.aalto.fi/en/publications/search.html?search=solowski&ordering=researchOutputOrderByPublicationYear&descending=true

**Research**

The goal of the research is to replicate numerically historical landslides, which have had significant societal or industrial impact. The research may also investigate landslide protection barriers as well as enhance the material point method and numerical models, leading to improvements in the predictive capabilities. It is suggested that the successful candidate will use Uintah open source software suite, enhanced locally in the group led by Prof. Sołowski (see the group publications).

The work is part of the prestigious project funded by the Academy of Finland – focusing on the simulation of landslides and avalanches. Therefore, the successful candidate will be required to cooperate with two PhD students working on related subjects at Aalto as well as travel to conferences to present the results of the research.

**Requirements**

We are seeking a candidate who is an enthusiastic team player interested in landslides and their impact on the society. The performed research aim is to further develop the material point method (most likely Generalized Interpolation Material Point Method or some other advanced formulation available) and constitutive models for material so the landslide / avalanches / debris flow simulations will become more realistic. Ultimately, the research should lead to the material point method becoming a viable tool for practicing engineers to predict the landslides outreach and to design landslide protection barriers.

The ideal candidate should have:
(1) deep knowledge about landslides or avalanches, coupled with
(2) the understanding of advanced models, based on continuum mechanics, which can be used for simulation of such events and
(3) a deep knowledge of numerical methods, in particular the material point method,
(4) ideally as coded in the Uintah framework.

The successful candidate should excel at least in one of the mentioned areas while having just rudimentary knowledge of the others.

The successful candidate will have some freedom about the choice of landslides to replicate in his/her simulations. Knowledge of landslide events and their characteristic (or perhaps previous work on such event characterization) will be an additional asset. Similarly, any contacts with the industry or society affected by the landslide event are welcome.

The position requires excellent skills in writing and communicating in English. The candidate should also have a PhD degree (or obtain a PhD degree by the starting date of the contract).

The shortlisted candidates will be asked to prepare a draft research plan covering the duration of the contract, which should lead to impactful publications. The successful candidate who satisfy the Finnish Academy requirements for application for the post-doctoral fellow (2 year position) should also make such an application during his/her stay at Aalto.

**Contract, salary and the starting date**

The postdoctoral position is contract-based; one year contract is granted first. The position duration will be extended if the candidate is successful in his/her application for the Finnish Academy funding. Also, an extension is possible if other sources of financing will be available.

Aalto University applies the salary system of Finnish universities. Typical starting salary is 3200-3400 euro per month (before tax).

The starting date is flexible. However, the candidate is required to start working at Aalto not later than May 2018.

**For more information**

For further details on the position, please contact Prof. Wojciech Sołowski, wojciech.solowski@aalto.fi. For further information regarding the recruitment process, contact HR Coordinator Anu Virtanen, anu.k.virtanen@aalto.fi.

**How to apply**

The applications for the Doctoral Candidate position are to be submitted through the eRecruitment system (<https://rekry.saima.fi/aaltohome/application_edit_welcome.html?job_id=1557&field_id=0&place_id=108&did=5900&jc=1&lang=en> ) no later than 3rd December, 2017. (Potential and interested candidates are encouraged to apply even if they are still finalizing their doctoral degrees)

**Required application documents**

* Motivation letter (max. 1000 words). The letter should include sections related to: (1) how the previous experience and knowledge of the candidate could be used for the project success, (2) explanation why the candidate is interested in research on landslides, (3) what scientific and societal impact the proposed research could have and (4) what the candidate expects from the position and how it will advance his career. A research plan, which should cover the research during the 1 year contract will be additionally asked from the shortlisted candidates. That plan should be an extension of section (3) of the motivation letter and be no longer than 2 pages A4.
* Extended CV
* A list of publications
* A summary of the PhD thesis, with a link to a full / draft thesis if available
* A list of of maximum 5 most significant publications for the position
* Names of two referees who will agree to give references in writing or over the phone

All material should be submitted in English and in PDF format. The candidates may be asked for extra documents necessary such as full text of certain publications or PhD thesis.

Aalto University reserves the right for justified reasons to leave the position open, to extend the application period and to consider candidates who have not submitted applications during the application period.