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UNIVERSITY OF SASKATCHEWAN
Plant Phenotyping and Imaging Research Centre
P2IRC.USASK.CA

P²IRC Postdoctoral Fellow in Modeling & Simulation of Plant Development

October 27, 2017

Primary Purpose:
We are searching for a bright and enthusiastic individual to join our team as a postdoctoral fellow in the area of modeling & simulation of plants and crops. This is part of the "Mechanistic Modeling of Plant Development for Plant Phenomics" theme of the P²IRC project. Specifically, the role will involve modeling, simulation of plants, and creating models incorporating biomechanical properties. The ideal candidate will have strong computer programming skills and a keen interest in computer graphics and biological modeling. The position will be co-supervised by Drs. Przemyslaw Prusinkiewicz and Ian McQuillan at both the Department of Computer Science at the University of Calgary and the Department of Computer Science at the University of Saskatchewan. The location of the position, being in Calgary, Saskatoon, or combined is negotiable.

The "Mechanistic Modeling of Plant Development for Plant Phenomics" theme in P²IRC consists of an interdisciplinary and collaborative team consisting of seven faculty and their graduate students. The team is led by Drs. Przemyslaw Prusinkiewicz and Ian McQuillan. More information is available at https://www.cs.usask.ca/research/phenotyping-centre/.

Context:
The Plant Phenotyping and Imaging Research Centre (P²IRC) is an agricultural research centre managed by the Global Institute for Food Security (GIFS) and located at the University of Saskatchewan. P²IRC was established thanks to funding awarded to the University of Saskatchewan by the Canada First Research Excellence Fund award, *Designing Crops for Global Food Security*.

GIFS (www.gifs.ca) was founded in 2012 to perform research that will help deliver transformative innovation to agriculture in both the developed and the developing world. Research at GIFS can be divided into three pillars; seed and developmental biology, root-soil-microbial interactions, and digital and computational agriculture. The latter pillar is occupied by P²IRC.

P²IRC's seven-year transdisciplinary program will transform crop breeding through research in phenometrics, image acquisition technologies, computational informatics of crop phenotype data, and societal and developing world impact. P²IRC (http://p2irc.usask.ca/) is a major research centre with partners located on campus, across Canada, and internationally.

This research has been undertaken thanks in part to funding from the Canada First Research Excellence Fund

Qualifications:

Education: Relevant post-graduate training (Ph.D. or previous PDF) in computer science, computer graphics, simulation, biological modeling, or a related discipline. PhD must have been awarded within five years preceding the appointment.

Experience: Previous experience with one or more of the following is required: 3D modeling and simulation, graphics, or physics-based simulation.

Specific Accountabilities:

- Contribute to the development of new plant models
- Help with the incorporation of new mechanistic properties of plants into plant models
- Incorporate and combine models of tissue biomechanics into simulations of plant growth and development
- Contribute to the modeling of the genotype-to-phenotype mapping by using mechanistic model-based approaches
- Help foster collaboration with other themes of the P2IRC project, such as those working on image processing, machine learning, and also those establishing bioinformatics linkages between phenotype and genotype

Skills:

- Research motivation, good command of English, and excellent communication skills
- Excellent programming skills and ability to rapidly understand different modeling algorithms; experience contributing to large software platforms is a plus
- Familiarity with data repositories of genomic and phenotypic information
- Knowledge of C++, Java, and Python

Salary Information:
The salary offered will be in the range of $45,000-65,000 CAD, and will be based on training, education, and experience.

Duration:
This term position will be for up to three years, commencing as soon as possible. Annual re-appointment will be dependent upon satisfactory performance, immigration status (if applicable), and the availability of funding.

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Application Procedure:
Send an email a cover letter indicating their interest and experience, a CV, and transcripts from university degrees to plant_modeling_position@cs.usask.ca

Inquiries regarding the position can be directed to Dr. Przemyslaw Prusinkiewicz (pwp@ucalgary.ca) or Dr. Ian McQuillan (mcquillan@cs.usask.ca).

Applications will begin to be reviewed Nov 20, 2017, and continue until a suitable candidate is found. We appreciate all expressions of interest; however, only those candidates whose backgrounds best suit our requirements will be contacted. All application materials will be treated confidentially.

All qualified candidates are encouraged to apply; however, Canadian citizens and permanent residents of Canada will be given priority.

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