P^{2}IRC Postdoctoral Fellow in Modeling & Simulation of Plant Biomechanics and Development

April 11 , 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 and simulation of plants and crops. The role will involve modeling, simulation of plants, and creating hybrid models that incorporate biomechanical models. The ideal candidate will have strong computer programming skills and a keen interest in computer graphics, modeling, and bioinformatics and computational biology. The position will be co-supervised by Drs. Ian Stavness and Ian McQuillan in the computer science department at the University of Saskatchewan and involve collaboration with researchers at the University of Calgary (http://algorithmicbotany.org/).

This position is part of Project 3.5 in the Plant Phenotyping and Imaging Research Centre (P^{2}IRC) portfolio. Project 3.5, "Mechanistic Modeling of Plant Development for Plant Phenomics", consists of an interdisciplinary and collaborative team of seven faculty and their graduate students. The team is led by Drs. Przemyslaw Prusinkiewicz (University of Calgary) and Ian McQuillan (University of Saskatchewan). More information is available at https://www.cs.usask.ca/research/phenotyping-centre/.

Context:

The Plant Phenotyping and Imaging Research Centre or P^{2}IRC (http://p2irc.usask.ca/) is an agricultural research centre managed by the Global Institute for Food Security or GIFS (www.gifs.ca/) and located at the University of Saskatchewan. P^{2}IRC 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 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 P^{2}IRC.

P^{2}IRC'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. P^{2}IRC is a major research centre with partners located on campus, across Canada, and internationally.

GIFS | GLOBAL INSTITUTE FOR FOOD SECURITY

Growing science for life

PotashCorp - a Founding Partner

UNIVERSITY OF SASKATCHEWAN

Plant Phenotyping and Imaging Research Centre

P2IRC.USASK.CA

Qualifications:

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

Experience: Previous experience with one or more of the following is required: physics-based simulation/finite-element simulation, 3D modeling and simulation, and/or machine learning methods in a bioinformatics context.

Specific Accountabilities:

- Incorporate and combine models of tissue biomechanics (http://www.artisynth.org) into simulations of plant growth and development (http://algorithmicbotany.org/virtual_laboratory)
- Contribute to the modeling of genotype-to-phenotype mapping by using mechanistic model-based approaches
- Contribute to the modeling of roots
- Help foster collaboration with other themes of the P²IRC project such as those working on image processing, machine learning, and establishing bioinformatics linkages between phenotype and genotype

Skills:

- Research motivation, good command of English, and excellent communication
- Excellent programming skills and the 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 $45,000-55,000 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.

Application Procedure:
(1) Send an email cover letter that describes both your interest and experience, a CV, and transcripts from your university degrees to plant_modeling_position@cs.usask.ca
(2) Complete a short online application form: https://goo.gl/forms/6pDscyUWT3rqgFDD2

Inquiries regarding the position can be directed to Dr. Ian Stavness (ian.stavness@usask.ca) or Dr. Ian McQuillan (mcquillan@cs.usask.ca).

Applications will begin to be reviewed on May 8, 2017 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.