IPNet Digest Volume 29, Number 04 March 20, 2022
Today's Editor: Patricia (Patti) K. Lamm, Michigan State University
Today's Topics:
 PhD Position: UQ for PDE-Based Inverse Problems, DTU, Denmark
 Postdocs: Models, Algorithms, Applications Including Learning Science,
Tufts U.
 Senior Scientist: Mathematical IT Support, Graz, Austria
Submissions for IPNet Digest:
 Mail to ipnet-digest@math.msu.edu
Information about IPNet:

From: Per Christian Hansen <pcha@dtu.dk> Date: Saturday, February 26, 2022 Subject: PhD Position in UQ for PDE-Based Inverse Problems

https://ipnet.math.msu.edu/

PhD Position in UQ for PDE-Based Inverse Problems, DTU, Denmark

The Technical University of Denmark (DTU) has an opening for a 3-year PhD position. The position is part of the research project CUQI, Computational Uncertainty Quantification for Inverse problems (www.compute.dtu.dk/english/cuqi).

This position focuses on computational aspects of uncertainty quantification (UQ) for inverse problems formulated in terms of PDEs, with applications in, e.g., inverse scattering problems and problems in electrical impedance tomography. For such problems, standard sampling methods are computationally too expensive to work in practice, and therefore alternatives must be found, e.g., via direct inversion formulas or surrogate models. The goal of the project is to develop and evaluate numerical UQ tools and best practices suited to these inverse problems. The project relies on a combination of theory development and numerical computations. Experience with inverse problems or Bayesian inference will be a plus.

For more details and to apply: tinyurl.com/UQPHD

The applicant will work in a team of PhD students, postdocs and faculty members in the Section for Scientific Computing, and must contribute with research towards the overall goals of the CUQI project. Applicants are expected to give limited contributions to teaching and training activities as well as supervision of students.

The deadline of applications is March 31, 2022 at 23:59 (Danish time).

Submitted by: Professor Per Christian Hansen Section for Scientific Computing Department of Applied Mathematics and Computer Science Technical University of Denmark http://people.compute.dtu.dk/pcha/

From: "Miller, Eric L" <Eric.Miller@tufts.edu>
Date: Thursday, March 17, 2022
Subject: Postdoctoral Researcher Openings

Tufts University has openings for three post-doctoral researchers to engage in cross-cutting projects focusing on the development of "precision" models and algorithms with applications in learning science, nutrition, and medicine. These three domains are seeing an explosion in the types and guantities of information that can be collected to provide insight into various aspects of human Practitioners in these fields are eager to use physiology and psychology. these data to understand the dynamics of a wide variety of processes taking place both within and between people and make timely and accurate predictions at the scale of the individual. The characteristics of the data however render traditional analysis methods, largely concerned with population level statistics, inadequate. Many of these challenges arise from issues of heterogeneity. Some sources such as wearables provide data continuously. Others yield measurements at only a few discrete points in time (e.g., biomarkers derived from saliva samples) while audio and video are examples of data that may be provided in noncontiguous intervals of varying length. Most of these data are only indirectly related to the phenomena of interest with no explicit model linking the two as is the case for student work in the context of learning, electronic medical records for nutrition or medicine, or the results of questionnaires in all applications of interest. Finally, although the quantity of data collected about any one individual may be relatively large, practical considerations make the number of participants associated with most studies relatively small, on the order of tens at most making these simultaneously "big" and "small" data problems.

While learning, nutrition, and medicine each possess unique characteristics, the common challenges just described strongly suggest that an integrated approach to "precision analytics" will provide a fruitful path forward. Thus, we are looking for three PhD-level scientists with interests in pioneering rigorous and at the same time useful solutions to the problems outlined above. Each researcher will lead the effort in a specific domain, and the group as a whole will work collaboratively to exploit underlying commonalities across the Successful candidates will have a PhD in a guantitative different disciplines. discipline such as applied mathematics, statistics, signal processing, machine learning, or physics with a track record of high-quality publications in relevant journals and peer reviewed conferences. We seek individuals who will advance the state of the art in machine learning, data science, artificial intelligence etc. in a manner that also support the research goals and interests of our application domain partners drawn from

The Tufts Center for Applied Brain and Cognitive Sciences The Tufts Institute for Research on Learning and Instruction Jean Mayer USDA Human Nutrition Research Center on Aging The Stuart B. Levy Center for Integrated Management of Antimicrobial Resistance For more information about this position, please email Prof. Eric Miller at eric.miller@tufts.edu. Interested candidates should provide Prof. Miller with a copy of their CV, list of references, cover letter, and copies of relevant articles, theses, technical reports etc. Submitted by: Eric L. Miller Director, Tufts Institute for Artificial Intelligence Professor of Electrical and Computer Engineering Professor of Computer Science, Secondary Appointment Professor of Mathematics, Secondary Appointment Professor of Biomedical Engineering, Secondary Appointment Contact: email: eric.miller@tufts.edu 617.627.0835 Phone: Office: Joyce Cummings Center, Room 616 Ground mail: Halligan Hall, 161 College Ave., Medford Ma, 02155 From: "Moser, Melanie (melanie.moser@uni-graz.at)" <melanie.moser@uni-graz.at> Date: Wednesday, March 16, 2022 Subject: (Senior) Scientist for mathematical IT support, Graz, Austria At the University of Graz, researchers and students work across a broad disciplinary spectrum to enlarge our knowledge, and find strategies to deal with challenges our society is confronted with and to shape tomorrow's world. The University of Graz is a place which combines high quality academic research and teaching, where achievement is rewarded, careers are promoted, and social diversity is encouraged - all within a modern, award-winning working environment. Our motto: We work for tomorrow. Join us! The Institute of Mathematics and Scientific Computing is looking for a (Senior) Scientist for mathematical IT support (m/f/d) https://jobs.uni-graz.at/ausschreibung/en/?jh=5047tagi8ibch0ihcjrtdg2xh5imcg

40 hours a week expected employment for the period of 6 years with an objective agreement position to be filled as of now

Career objective: Permanent employment as Senior Scientist.

Your duties

• Contributions to the management and development of in-house mathematical and interdisciplinary research software including the required third-party software (e.g., establishing usability for students, researchers and external partners, involvement in documentation and scientific publications)

• Collaboration at the institute to meet software development demands in scientific projects (e.g., improvement of internal codes through profiling, analysis and optimization of algorithms with regard to complexity, data transfer and parallelization)

• Independent teaching in applied mathematics, e.g., in the field of data science

• Participation in organizational, administrative and data management tasks

Your Profile

• Doctoral degree in a mathematical, computer science or related field of study

• Advanced knowledge in the mathematical foundations of numerical algorithms and scientific computing

Very good practical programming skills in C++ or Python

• Knowledge in modern programming languages, parallelization as well as the development of software packages, graphical user interfaces, web applications and interfaces to commercial software (desirable)

• Competencies in an additional related field of study in mathematics, computer science or in the natural sciences (desirable)

• Ability to integrate into the institute's research and application profile, and to establish connections to interdisciplinary cooperation partners as well as the Idea\_Lab

Ability to teach courses in applied mathematics

• Very good English language skills, ability to communicate in German language

Ability to work in a team, to organize and to communicate

Our Offer

Classification Salary scheme of the Universitäten-KV (University Collective Agreement): B1

Minimum Salary

The minimum salary as stated in the collective agreement and according to the classification scheme is EUR 4.061,50 gross/month (for full-time employment). This minimum salary may be higher due to previous employment periods eligible for inclusion and other earnings and remunerations.

We offer you a job with a lot of responsibility and variety. You can expect an enjoyable work climate, flexible work hours and numerous possibilities for further education and personal development. Take advantage of the chance to enter into a challenging work environment full of team spirit and enthusiasm for your job. Application deadline: 06.04.2022

The University of Graz strives to increase the proportion of women in particular in management and faculty positions and therefore encourages qualified women to apply.

Especially with regard to academic staff, we welcome applications from persons with disabilities who meet the requirements of the advertised position.

Applicants with proof of COVID-19 vaccination will be given preference if equally qualified. For further information, please refer to our general application regulations. https://jobs.uni-graz.at/en/FAQ/

For further information or questions, please contact:

Kristian Bredies
kristian.bredies@uni-graz.at
03163805170

Please note that in order to comply with the applicable data protection regulations, we can only accept applications via our web-based applicant tool for this vacant position.

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