IPNet Digest

Today's Editor: Patricia (Patti) K. Lamm, Michigan State University

Today's Topics: Postdoc: Image Analysis, Computer Vision, at Tufts University PhD Position: Mathematical Shape Analysis, at University of Twente Postdoc: Broadband Ultrasound Tomography Image Reconstruction, at UCL Asst Prof: Num. Methods for PDEs, incl. Inv. Problems, at Eindhoven U Tech PhD/Postdocs: Parametric & Random PDEs, incl. Inv. Problems, at RWTH Aachen PhD Position: Medical Imaging and Inverse Problems at Univ Innsbruck Table of Contents: Inverse Problems

Submissions for IPNet Digest: Mail to ipnet-digest@math.msu.edu

Information about IPNet: https://ipnet.math.msu.edu/

From: "Miller, Eric L" <Eric.Miller@tufts.edu>
Date: Tuesday, June 28, 2022
Subject: Image Analysis/Computer Vision Post Doc

I have an immediate opening for a post-doctoral research associate to undertake a project focusing on the development of processing and analysis methods to address problems of denoising, segmentation, and adaptive sampling/acquisition of 4D (3 space + time) two-photon excited fluorescence (TPEF) data cubes. This work will be performed in collaboration with a team of biomedical engineers seeking to understand the role of metabolic dysfunction at the onset of Alzheimer's disease (AD) using information that can be gleaned from dynamic, TPEF data collected from human brain-like AD tissue models. More specifically, a key aim of the project is to develop the models and processing tools to extract from these data robust optical metabolic readouts of AD tissue models monitored dynamically to identify the changes that occur at the onset of neuroinflammation and plaque-like formation and the extent to which they are reversed upon interventions.

Applicants must have a PhD in electrical engineering, computer science, applied mathematics, statistics or a similar field. The ideal candidates will have experience with modern methods of image processing, mathematical imaging, and/or computer vision and a strong technical background in one or more of the following: machine learning, statistical signal and image processing, optimization, and data science. Programming experience in Matlab or python is preferred.

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 eric.miller@tufts.edu Phone: 617.627.0835 Office: Joyce Cummings Center, Room 616 Ground mail: Halligan Hall, 161 College Ave., Medford Ma, 02155

From: José A. Iglesias <jose.iglesias@utwente.nl> Date: July 28, 2022 Subject: PhD Position in mathematical Shape Analysis, University of Twente

We are looking for a PhD candidate to work on efficient shape representations. This is a challenging area connecting geometry to numerical mathematics and with wide-ranging applications, particularly in biological and medical imaging.

The successful candidate will be supervised by Dr. José A. Iglesias Martínez (jose.iglesias@utwente.nl) within the Mathematics of Imaging and AI group headed by prof. C. Brune at the Department of Applied Mathematics.

Further information about the position and an application form (with deadline 17
July 2022) are available at:
https://urldefense.com/v3/__https://utwentecareers.nl/en/vacancies/614/phdposition-in-mathematical-shape-analysis/__;!!HXCxUKc!
ztm0rWmxqFRKjGNorqPPoQaKF8zxxjY_fXRswf8X2Jb53S0WTTCCJcBTgF7FtEs7jARJw5ZdMeY95oke
bneJasFquUq-k0GGAA\$

From: Simon Arridge <S.Arridge@cs.ucl.ac.uk>
Date: July 11, 2022
Subject: Postdoc Research Fellow in Broadband Ultrasound Tomography Image
Reconstruction

Duties and Responsibilities

UCL's Department of Computer Science conducts internationally leading research across a broad range of theoretical and applied topics. This post will build on considerable experience in developing novel approaches to ultrasound tomography and photoacoustic tomography gained through a long term collaboration with UCL's Photoacoustic Imaging and Biomedical Ultrasound Groups.

Duties of the research associate include developing and conducting individual and collaborative research objectives, proposals and projects as part of the overall work of the Ultrasound Computed Tomography project. The research associate must be able to communicate material of a technical nature and be able to build internal and external contacts. They may be asked to assist in the supervision of student projects, the development of student research skills, provide instruction and plan/deliver seminars relating to the research area of the project.

Key Requirements

Applicants must have (or be about to receive) a PhD degree in mathematics or statistics (or a closely related discipline). The ideal candidates will be experienced in one or more of the following areas: inverse problems, mathematical imaging, analytical and computational methods for solving partial differential equations, optimisation. Experience in programming is highly desirable (e.g. MATLAB / Python/C++).

Further Details
See:
https://atsv7.wcn.co.uk/search_engine/jobs.cgi?SID=
amNvZGU9MTg4NTY0MSZ2dF90ZW1wbGF0ZT05NjUmb3duZXI9NTA0MTE30CZvd25lcnR5cGU9ZmFpciZi
cmFuZF9pZD0wJmpvYl9yZWZfY29kZT0x0Dg1NjQxJnBvc3RpbmdfY29kZT0yMjQ=

Informal enquiries to :
Simon Arridge : S.Arridge@ucl.ac.uk
Ben Cox : B.Cox@Ucl.ac.uk

From: Karen Veroy-Grepl k.p.veroy@tue.nl [via NADIGEST] Date: June 15, 2022 Subject: Assistant Professor Position, TU/e

Eindhoven University of Technology is aiming to appoint a Tenure-track Assistant Professor in Computational Science at the Center for Analysis, Scientific Computing and Applications in the Department of Mathematics and Computer Science.

The Computational Science group focuses on numerical methods for (partial) differential equations, model order reduction, and scientific machine learning, particularly for the efficient solution of differential equations in the context of data assimilation, control, optimization, inverse problems, Bayesian methods, uncertainty quantification, and optimal experimental design. For this position, we are looking for an applied mathematician with expertise in one or more of these fields, and an interest in exploring connections not only to current developments in applied mathematics, but also to applications through academic and industrial collaborations in fields such as medicine, mechanical engineering, electrical engineering, geophysics, and others.

During the first six months the position is open to female applicants only; if, after six months, the position has not been filled, the

position will then be opened to all applicants. For more information, please visit

https://urldefense.com/v3/__https://jobs.tue.nl/en/vacancy/assistant-professorin-computational-science-932807.html__;!!HXCxUKc! 2zm2YmeTNwIZzL77tF2fAYSFao8jK7zc8DS0jv4et0m_9bsIygneVvf6rQeR-DCGiFIDdCHWdWmV8m9ufPNdDkouJl_9bkUQ_PQ\$

or contact Karen Veroy-Grepl .

Applications received before 31 July 2022 are guaranteed full consideration, but applications will continue to be screened until the position is filled.

From: Markus Bachmayr bachmayr@igpm.rwth-aachen.de [via NADIGEST] Date: June 17, 2022 Subject: PhD/Postdoc Positions, Parametric and random PDEs, Germany

Several positions in DFG-funded projects that can be filled at PhD or Postdoc level are available at RWTH Aachen, on several different subjects in numerical methods for parameter-dependent or random partial differential equations:

- Variationally correct methods based on neural networks for direct and inverse problems for parametric PDEs (project leaders: Markus Bachmayr and Wolfgang Dahmen),
- Construction and analysis of solvers combining sparse and low-rank approximations for parametric and random problems with multiscale features (project leaders: Markus Bachmayr and Lars Grasedyck),
- Adaptive stochastic Galerkin solvers of optimal computational complexity for PDEs with low-regularity random coefficients (project leader: Markus Bachmayr).

Applications will be accepted until the positions are filled. To apply, please send your application materials (motivation letter, CV, publication list, statement of research interests, transcripts) to Julia Schmitt-Holtermann (jholterm@igpm.rwth-aachen.de), indicating which of the above areas you are interested in. Informal inquiries are welcome.

From: Heiko Gimperlein heiko.gimperlein@uibk.ac.at [via NADIGEST] Date: June 17, 2022 Subject: PhD Position, Medical imaging and inverse problems, Univ Innsbruck

The new multidisciplinary FWF Forschungsgruppe "Oxidative damage & repair of membrane lipids in health and disease" offers 5 fully funded

PhD positions between mathematics and medicine. The projects are jointly supervised by colleagues from different backgrounds at the University and the Medical University of Innsbruck. The following two PhD projects may be of most interest to mathematicians: P2: LC-MS/MS inverse problem data analysis approach (based at Medical University) P3: Artificial neural network based imaging analysis (based at University of Innsbruck) Screening of applications starts on June 22, 2022. Late applications are welcome. Further information is available at https://urldefense.com/v3/ https://www.i-med.ac.at/fq15 ;!!HXCxUKc! 2zm2YmeTNwIZzL77tF2fAYSFao8jK7zc8DS0jv4et0m_9bsIygneVvf6rQeR-DCGiFIDdCHWdWmV8m9ufPNdDkouJl 9mS2cFFo\$ or by email (fg15@i-med.ac.at or Dr. Lukas Neumann, Lukas.Neumann@uibk.ac.at). From: "noreply@iopscience.org" <noreply@iopscience.org> Date: Thursday, June 23, 2022 Subject: Inverse Problems, Volume 38, Number 3, March 2022 Inverse Problems March 2022 Volume 38, Number 3 Table of Contents Special Issue Article: A new type of CGO solutions and its applications in corner scattering Jingni Xiao Papers: Low rank matrix recovery with adversarial sparse noise Hang Xu, Song Li and Junhong Lin Consistency of Bayesian inference with Gaussian process priors for a parabolic inverse problem Hanne Kekkonen Deep neural-network based optimization for the design of a multi-element surface magnet for MRI applications Sumit Tewari, Sahar Yousefi and Andrew Webb Estimating the memory parameter for potentially non-linear and non-Gaussian time series with wavelets Chen Xu and Ye Zhang

A content-adaptive unstructured grid based regularized CT reconstruction method with a SART-type preconditioned fixed-point proximity algorithm Yun Chen, Yao Lu, Xiangyuan Ma and Yuesheng Xu

Graph-based prior and forward models for inverse problems on manifolds with boundaries John Harlim, Shixiao W Jiang, Hwanwoo Kim and Daniel Sanz-Alonso

Initial state estimation from limited observations of the heat equation in metric graphs Satoru Iwasaki

A note on the high-dimensional sparse Fourier transform in the continuous setting Liang Chen

Carleman estimates and the contraction principle for an inverse source problem for nonlinear hyperbolic equations Loc H Nguyen and Michael V Klibanov

The lower bound of nonlocal gradient for non-convex and non-smooth image patches based regularization Junying Meng, Fagiang Wang, Li Cui and Jun Liu

An inversion algorithm for P-functions with applications to multi-energy CT Guillaume Bal, Ruoming Gong and Fatma Terzioglu

Un-supervised learning for blind image deconvolution via Monte-Carlo sampling Ji Li, Yuesong Nan and Hui Ji

https://iopscience.iop.org/issue/0266-5611/38/3
----- end -----