INSIGNEO Institute for *in silico* Medicine | The University Of Sheffield. | Sheffield Teaching Hospitals NHS Foundation Trust

# Insigneo Newsletter - December 2019


Welcome to our monthly Insigneo newsletter!

Our monthly e-newsletter keeps you up to date with events, funding, success stories and information. We hope you will find it useful! If you would like to add information and/or events to this newsletter please email: news@insigneo.org (the newsletter will be issued during the 2nd week of the month, excluding January and August). Please ensure that you submit news and events with a minimum of one week's notice.

## Insigneo Showcase 2020 - registrations open

INSIGNEO SHOWCASE2020

**Friday, 1 May 2020, Octagon Centre, Sheffield, UK**

Registrations are now open for the Insigneo Institute for *in silico* Medicine's Annual Showcase event which will be held on 1 May 2020 at the Octagon Centre, in

Sheffield, UK. This full day event is an opportunity for our members, funding agencies, regulatory agencies, industrial colleagues, and other academic groups in the UK and worldwide to meet once a year and see first-hand the latest innovations in personalised, predictive medicine produced by our Institute.

The day will feature:

- A keynote talk from Professor Andy Parker, University of Cambridge and talks from Insigneo members on the latest developments in their research areas.
- Early Career Researcher presentations – hear about emerging research with perspectives from the next generation of researchers;
- An exhibition showcasing *in silico* medicine's latest applications and developments from our industrial partners, non-profit organisations, research groups and projects;
- Networking opportunities and one-to-one discussions with funders, academics and clinicians.

**Register**

## Insigneo image competition


We invite our Insigneo members (including Associate Members) to enter our 2020 Insigneo image competition. The winner of the competition will receive a £50 Amazon voucher and (depending on suitability of format) the chance to be on the cover of the new Insigneo brochure which is distributed at the our annual Showcase event.  Selected competition entries will be featured on Insigneo's website, marketing materials and social media.

We are looking for high quality images to represent the range of Insigneo's research across all themes (Cardiovascular, Respiratory, Musculoskeletal, etc.)

We are keen to see a wide range of images that will help to raise awareness of the

applications of *in silico* medicine.  You may submit more than one image submission per category, but this must be done on separate forms.

**The deadline for entries is 23:59pm (GMT) on  20 January 2020.**

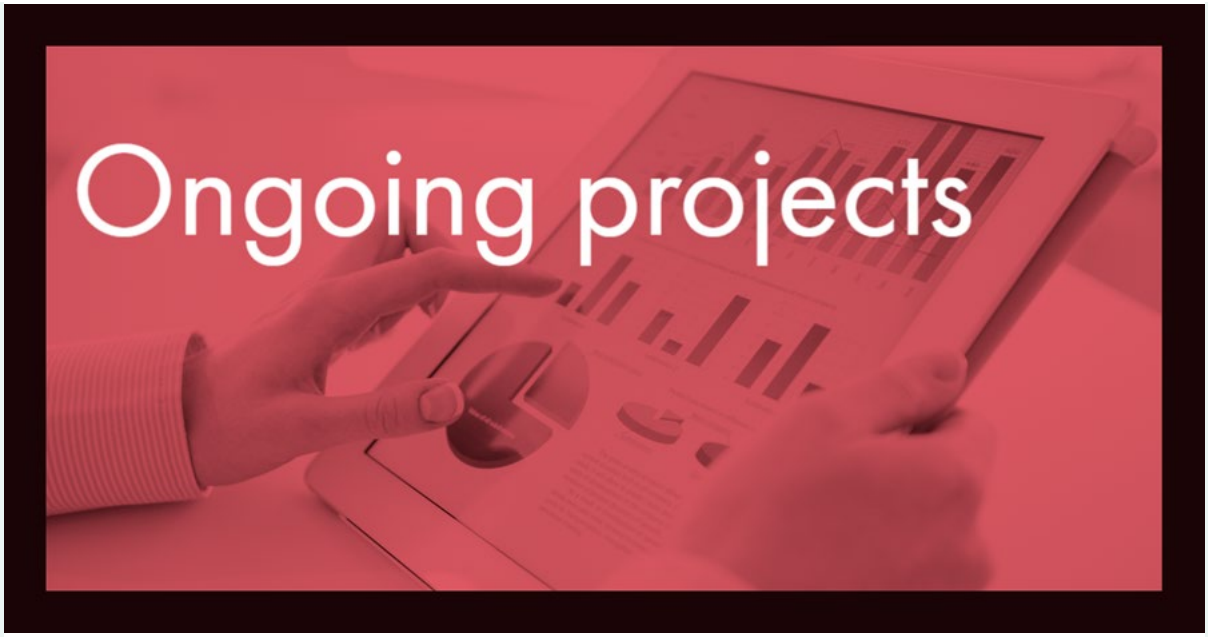
**Enter competition**

## Insigneo presents research at the Universidad Autonoma Ciudad Juarez, Mexico

Insigneo member Dr Maria-Cruz Villa-Uriol, Lecturer in the Department of Computer Science at the University of Sheffield, visited the Universidad Universidad Autonoma Ciudad Juarez (UACJ), Mexico in November as part of the University of Sheffield Higher Education Alliances project funded by the British Council to deliver a series of talks on her research at the Insigneo Institute for *in silico* Medicine and more widely in the Department of Computer Science.

**Read more**

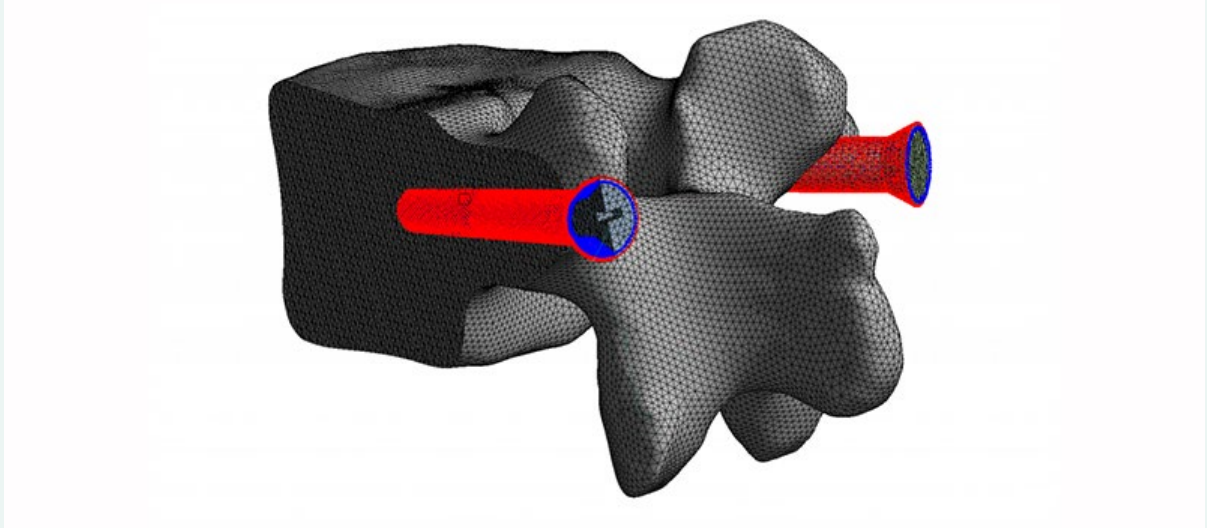
## Ongoing Projects




We are pleased to announce that we have published a new webpage featuring current projects being carried out by our members in the field of *in silico* medicine.

**Read more**

## RBF Morph joins Spinner as a Partner



We are pleased to announce that RBF Morph has joined our SPINNER project as a partner. RBF Morph are pioneers in providing reliable and high-performance mesh-morphing-based technology for CAE multiphysics modelling and optimisation.

RBF Morph will work with Spinner Fellow, Marco Senale, who is based in Ansys, Lyon, to use their technology to develop *in silico* models of the spine.

One of SPINNER's key objectives is the making of integrated, user-friendly, *in silico* models of the mechanics of damaged and reconstructed spinal segments that can be used for predictive design, patient-specific analysis and surgical navigation.

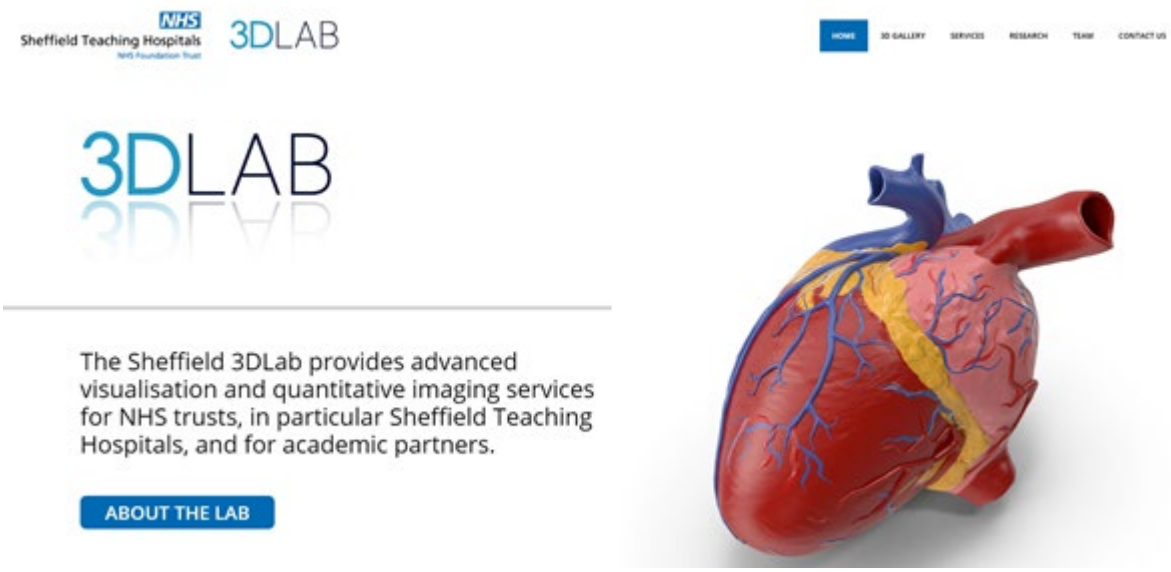
Read more

## MultiSim2 goes ‘Beyond Academia’ with a CLEAR IDEAS Workshop

On Wednesday, 23rd October, our MultiSim2 project hosted a Clear Ideas workshop: Beyond Academia. The workshop was attended by the MultiSim2 team and Insigneo Associate Members from the Integrated Musculo-Skeletal Biomechanics (IMSB) group who explored how to take their research Beyond Academia to the clinic, industry and the public. This workshop was facilitated by Dr Kamal Birdi and funded through EPSRC’s Creativity@Home initiative to bring creative thinking workshops and skills to the Engineering and Physical Science research community.

Read more

## Sheffield 3DLab new website



We're excited to share with you, our partner Sheffield 3DLab's new website.

Launched in 2010, the Sheffield 3DLab is a clinical department within Sheffield Teaching Hospitals, providing advanced visualisation and quantitative image services for both NHS patients and a number of research studies. The group has extensive experience of developing and implementing cutting edge image analysis software to enhance patient care. In addition, with over a decade's worth of well-curated image data, the 3DLab is an ideal partner for machine learning research. A number of Insigneo members work closely with the 3DLab and the team is always open to new collaborations on any new image analysis projects. For more information and contact details visit their new website.

**Visit website**

## Guest Lectures, Conferences & Seminars

**Insigneo Events**

13 January 2020
Modelathon 2020: Optimisation of interventions for osteoarthritic patients with multi-scale modelling

17 January 2020
Public Engagement and Media Training Workshop

30 January 2020
Insigneo Seminar: Total Lagrangian Explicit Dynamics (TLED) and projection-based contact mechanics to model the interaction between baby and maternal pelvic tissues during the second stage of labour (Dr Rudy Lapeer, University of East Anglia)

4 February 2020
Healthy Lifespan Institute WS2C – Insigneo workshop: *In silico* approaches for preclinical assessment of ageing, multi-morbidities and related interventions: challenges and opportunity at the University of Sheffield

25 February 2020
Insigneo Seminar: Engineering materials for biomedical applications: from electrospinning to 3D printing

19 March 2020
Insigneo Seminar/Mechanobiology Club - Dr Kim van der Heiden (Erasmus MC) &

Dr Annica Gad (Department of Oncology & Metabolism, University of Sheffield)

21 April 2020
Insigneo Seminar: “Mechanobiology of cell migration: connecting mathematical models and microfluidic-based data” (Professor José Manuel García-Aznar, University of Zaragoza)

1 May 2020
Insigneo Showcase 2020

14 May 2020
Insigneo Seminar: Professor Sarah Waters - Mathematical Institute, University of Oxford

1 June 2020
Insigneo Seminar: Mechanobiology (Dr Martial Balland, Grenoble Alpes University & Dr Chris Toseland, Department of Oncology & Metabolism, University of Sheffield)

**Other events**

24 - 28 February 2020
Advanced International School on imaging, modeling, and simulation in biomechanics and mechanobiology, Rome

27 February 2020
Workshop: “How to build your digital human twin?

26 August 2020
VPH2020 – save the date!

14 September 2020
BioMedEng 2020 conference – Save the date!

**For a full list of upcoming events visit: http://insigneo.org/events/**

## Vacancies

Chair in Computational Biomechanics
(Closing date: 07/01/2020)

Chair in Computational Modelling in Cardiovascular Disease
(Closing date: 08/01/2020)

PhD opportunity: A stochastic finite-element model for predicting changes in bone

strength
(Closing date: 31/12/2019)

PhD Opportunity: MRC DiMeN Doctoral Training Partnership – The role of tactile feedback from the foot in balance and gait across the lifespan
(Closing date: 06/01/2020)

PhD Opportunity: MRC DiMeN Doctoral Training Partnership – Magnetic resonance imaging of lung fibrosis in interstitial lung disease
(Closing date: 06/01/2020)

PhD Opportunity: MRC DiMeN Doctoral Training Partnership – Development of spinal cord PET-MRI for translational neuroscience applications
(Closing date: 06/01/2020)

## Publications

Research output affiliated to Insigneo in Scopus (please ensure papers are affiliated to the Insigneo Institute by including the words "Insigneo Institute for *in silico* Medicine"):

**Postnatal pelvic floor muscle stiffness measured by vaginal elastometry in women with obstetric anal sphincter injury: a pilot study** (International Urogynecology Journal) D. O. C. Anumba, S. Gillespie, S. Jha, S. Abdi, J.Kruger, A. Taberner, P. M. F. Nielsen, X. Li

**Muscle recruitment strategies can reduce joint loading during level walking** (Journal of Biomechanics) B. van Veen, E. Montefioria, L. Modenese, C. Mazzà, M. Viceconti

**Measurement of in vitro cardiac deformation by means of 3D digital image correlation and ultrasound 2D speckle-tracking echocardiography** (Medical Engineering and Physics) P. Ferraiuoli, L. S. Fixsen, B. Kappler, R. G. P. Lopata, J. W. Fenner, A. J. Narracott

**Location-Specific Comparison Between a 3D In-Stent Restenosis Model and Micro-CT and Histology Data from Porcine In Vivo Experiment** (Cardiovascular Engineering and Technology) P. S. Zun, A.J. Narracott, C. Chiastra, J. Gunn, A.G. Hoekstra

**Material Mapping of QCT-Derived Scapular Models: A Comparison with Micro-CT Loaded Specimens Using Digital Volume Correlation** (Annals of Biomedical Engineering) N. K. Knowles, J. Kusins, M. Faieghi, M. Ryan, E. Dall'Ara, L.M. Ferreira

**Linking Joint Impairment and Gait Biomechanics in Patients with Juvenile Idiopathic Arthritis** (Annals of Biomedical Engineering) E. Montefiori, L. Modenese, R. Di Marco, S. Magni-Manzoni, C. Malattia, M. Petrarca, A. Ronchetti, L. Tanturri de Horatio, P. van Dijkhuizen, A. Wang, S. Wesarg, M. Viceconti, C. Mazzà

**NARMAX model as a sparse, interpretable and transparent machine learning approach for big medical and healthcare data analysis** (Proceedings - 21st IEEE International Conference on High Performance Computing and Communications, 17th IEEE International Conference on Smart City and 5th IEEE International Conference on Data Science and Systems, HPCC/SmartCity/DSS 2019) S. Billings, H.-L.Wei

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