Image-Based Simulation for Industry 2022 (IBSim-4i 2022)
Monday 17 October 2022

Training

9:30am	**Registration and Refreshments**
10am	**gVXR Session 1: Introduction to X-ray Attenuation and its Implementation in gVXR**
11am	**gVXR Session 2: First X-ray Radiograph Simulations** - Monochromatic spectrum - Multi-material samples
12:30pm	**Lunch**
1:30pm	**gVXR Session 3: More Advanced Simulations** - Polychromatic spectrum - Photonic noise - Source shape (e.g. parallel vs cone beam) - Focal spot
2:45pm	**Afternoon Break**
3:15pm	**gVXR Session 4: Simulation of Tomography Acquisition**
5pm	**Day concludes**

Tuesday 18 October 2022

Training

9am	**CIL Session 1: Introduction to XCT and the CIL Framework for Reconstruction of Commercial Lab-based XCT Data with FBP/FDK**
10:30am	**Morning Break**
11am	**CIL Session 2: Pre-processing of XCT Data, e.g. Centre of Rotation Correction**
12:30pm	**Lunch**
1:30pm	**CIL Session 3: Iterative reconstruction methods for standard XCT data**
2:45pm	**Afternoon Break**
3:15pm	**CIL Session 4: Activity of Choice** Choose one of the following sessions: 1. Reconstruction of data simulated from gVXR 2. Advanced iterative reconstruction with spectral XCT data 3. Advanced iterative reconstruction on laminography XCT data
5pm	**Day concludes**

Wednesday 19 October 2022

Forum

9:30am	**Registration and Refreshments**
10am	**Welcome**
10:15am	**Speaker: Keynote 1** Monte Carlo simulations for X-ray imaging: applications in metal fatigue crack characterization **Jean Michel Letang**
	Session 1: Presentations
11am	Image-based simulation techniques for AM-built rocket engine components **Byron Blakey-milner**
11:25am	Data-driven material decomposition in industrial CT **Moritz Weiß**
11:50am	Multiple DOF for X-ray CT Hydrocarbon Exploration **Mario Sandoval**
12:15pm	**Lunch**
	Session 2: Presentations
1:15pm	3D Reconstruction of Residual Stresses in Bodies Manufactured by Laser Powder Bed Fusion Using the Strain Tomography Technique **Fatih Uzun**
1:40pm	Microstructure reconstruction of porous media via sequence prediction for computational material design **Xiangyun Ge**
2:05pm	SuRVoS2 – An open-source application to accelerate annotation and segmentation of 3D image data using supervoxels and machine learning **Dr Oliver King**
2:30pm	Beyond Periodic Representation of Microstructural Geometry **Dr. Martin Doškář**
2:55pm	**Afternoon Break**
	Session 3: Presentations
3:25pm	Generation of images for surface extraction and surface roughness characterisation using virtual X-ray CT scanning and Machine Learning **Amin Garbout**
3:50pm	Data-driven techniques for creating digital twins in additive manufacturing **Dr Oliver Barrowclough**
4:15pm	Novel x-ray ct flyscan trajectories and their potential for industrial applications **Charlotte Hagen**
4:40pm	Recent development for voxel-based lattice Boltzmann and finite element solver on multi-core CPU/GPUs **Liang Yang**
5:05pm	**Group Photo**
5:30pm	**Networking Reception and Buffet Dinner**
9pm	**Evening Concludes**

Thursday 20 October 2022

Forum

9am	**Refreshments**
9:30am	**Speaker: Keynote 2** CT image-based modelling of composite materials' failure **Philip Withers**
	Session 4a: Presentations
10:15am	Micro-Scale Results from the Benchmark Exercise on the Image-Based Permeability Prediction of Composite Reinforcements **Dr Elena Syerko**
10:40am	**Morning Break**
	Session 4b: Presentations
11:10am	WebCT: Fully Featured Browser-Based Interactive X-Ray Simulations for Scan Planning and Training **Iwan Mitchell**
11:35am	Identification of the parameters of an image-based model using integrated digital volume correlation **Léonard Turpin**
12pm	Phase segmentation of uncured composite prepregs via deep learning **Mr. Pedro Galvez-hernandez**
12:25pm	**Lunch**
	Session 5: Presentations
1:25pm	X-ray Tomographic Reconstruction using Adaptive Mesh Representations **Thomas Blumensath**
1:50pm	AMITEX_FFTP - A massively parallel FFT code for Image-Based mechanical simulation of heterogeneous materials **Lionel Gélébart**
2:15pm	A deep learning stochastic reconstruction method with Hilbert curves **Shan Zhong**
2:40pm	**Afternoon Break**
	Session 6: Presentations
3:10pm	Imaged Based Simulation of Weld Toes and Corrosion Pits in Plasma Welded Nickel Aluminium Bronze (NAB) **Ms Tamsin Dobson**
3:35pm	A New Deep Learning Architecture for Increasing the Mesh Density of Physical Fields in Metal Forming Numerical Simulation **Fouad Keramsi**
4pm	When simple models fail: CT-FEA simulations of metal foams **Artem Lunev**
4:25pm	**Wrap-up**
4:40pm	**Forum Concludes**