Christopher Pain – Imperial College London, UK

Talk title	Applying AI techniques to Model Fluid Flows
Biography	Prof. Christopher Pain leads the Applied Modelling and Computation Group at Imperial College London (ICL). He is also the director of the Data Assimilation Lab in the Data Science Institute at ICL, co-director of the AI-Physics Modelling Centre at Imperial-X and holds visiting professorships at Shanghai, South Carolina and Bangor universities. A computational physicist, Prof. Pain's research focuses on numerical methods, AI, and engineering fluid dynamics. He led the development of the general-purpose parallel CFD code 'Fluidity'; the first 3D anisotropic mesh adaptivity method based on optimisation; and the first general conservative mesh-to-mesh interpolation approach. Prof. Pain has pioneered the use of unstructured meshes and dynamic mesh optimisation for a range of applications including coupled fluid/structure interaction, urban flows, multiphase flow and geothermal energy. He has been at the forefront of applying the latest AI technology to computational science applications including modelling the fuel management of the UK's Advanced Gas Cooled Reactors with AI methods; developing the first non-intrusive reduced-order models for fluid flow; the use of adversarial methods; the application of traditional convolutional networks to data on unstructured meshes. He has more than 250 journal papers, an h-index of 51 and total citations of almost 9000 (according to google scholar).