BriCS-Turing Isambard-AI 1-Day Workshop at The Alan Turing Institute

Thurs, 12th March

The Bristol Centre for Supercomputing (BriCS) and The Alan Turing Institute are running a joint 1-day workshop on Isambard-AI hosted at The Alan Turing Institute. BriCS is home to Isambard-AI, a new leadership-class supercomputer funded by the Department for Science Innovation and Technology (DSIT) and UKRI, part of the AI Research Resource (AIRR). The Alan Turing Institute is the UK's national institute for data science and artificial intelligence. The workshop will include hands-on sessions delivered by BriCS and the Turing.

Time	Session
10:00 – 11:15	**Session 1: BriCS** **Introduction to Isambard-AI** This session will familiarise attendees with using Isambard-AI, covering login and how to navigate Isambard-AI, including covering the use of common tools for installing and running software. The learning objectives are as follows: • Learn how to login using SSH + Clifton • Use modules to access software • Submit jobs using the slurm workload manager • Install software using a range of common tools https://docs.isambard.ac.uk/user-documentation/tutorials/setup/ https://docs.isambard.ac.uk/user-documentation/tutorials/intro-tour/

11:15 – 11:30	Break
11:30 – 12:30	**Session 2: BriCS** **Distributed PyTorch Training** This session introduces how to dispatch a distributed training job on Isambard-AI, bridging the gap between training on a single node to distributing jobs across multiple nodes. The learning objectives are as follows: • Learn to launch a distributed PyTorch job. • Understand how Slurm, MPI, and NCCL interact. • Understand how MPI and NCCL are dispatched and the modules required for them. • Combine the above to make use of the high-speed network (Slingshot). https://docs.isambard.ac.uk/user-documentation/tutorials/distributed-training/
12:30 – 13:30	Lunch
13:30 – 14:45	**Session 3: Turing** **PyTorch Profiling** This session introduces some of the commonly used tools for profiling PyTorch workloads. Participants will learn how to measure performance, understand hardware utilisation, and identify computational bottlenecks in both single-node and distributed settings. The learning objectives are as follows:

	• Understand key performance concepts, including FLOPs, GPU utilisation, memory usage, throughput, and strong vs. weak scaling. • Use profiling tools effectively, including the PyTorch Profiler and NVIDIA Nsight Systems. • Interpret profiling outputs to identify bottlenecks. • Apply best practices to improve PyTorch training performance based on profiling data.
14:45 – 15:00	Break
15:00 – 16:00	**Session 4: Turing** **Containers** This session demonstrates how to use containers on Isambard-AI. The learning objectives are as follows: • Understand why containers are useful and when to use containerized workflows on Isambard-AI • Understand the different tools available for containerization (Docker, Singularity, Podman-HPC) • Understand how to write your own container definition file • Run a container interactively • Run a container as part of a script • Running containers across multiple nodes with MPI