| Application | Physics/Biology Apps | Commercial Apps | Social media analysis |

| Programming | Declarative/Expressive Lang: Python, C++, Java, Scala, Apache pig Spark SQL.. |

| High-level API | Parallel Programming: TensorFlow, Spark, Hadoop... |

| Mid-level API | Distributed Processing: MPI, RPC, RDMA ... |

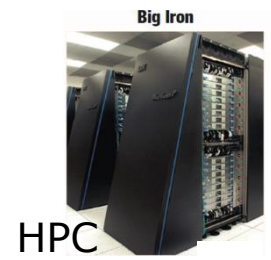| Low-level API | Parallel Processing: Eigen, OpenMP, OpenCL, Vector-Compiler, SIMD... |

| Hardware | CPU/GPU/ASIC, Memory, NVM, Disks – poss. virtualised |

OPTIMISATION

GPU cluster

Cluster (Amazon)

Big Iron

HPC

SSD

FPGA, TPU

09:45 - 10:30 Applications (High Performance Data Analytics)
09:45 - 10:15 Juha Jaykka (Univ. Cambridge COSMOS Intel Parallel Computing Centre): Advantages and disadvantages of modern parallel computing
10:15 - 10:30 Discussion

10:30 - 11:15 System Architecture I (HPC)
10:30 - 11:00 Christophe Dubach (Univ. Edinburgh): Lift: a Data-Parallel Language for High-Performance Parallel Pattern Code Generation
11:00 - 11:15 Discussion

11:15 - 11:30 Coffee Break

11:30 - 12:15 System Architecture II (Scheduling)
11:30 - 12:00 Daniel Goodman (Oracle Labs): Fine-grained parallel work scheduling in scale-up graph analytics
12:00 - 12:15 Discussion

12:15 - 13:00 Lunch

13:00 - 14:30 System Architecture III (Distributed Computing/Memory Management)
13:00 - 13:30 Aleksandar Dragojevic (Microsoft Research Cambridge): FaRM: a platform for low-latency computing
13:30 - 13:45 Sam Ainsworth (Univ. Cambridge):Graph Prefetching Using Data Structure Knowledge
13:45 - 14:15 Rajeev Raman (Univ. Leicester): In-memory memory processing of big data via succinct data structures
14:15 - 14:30 Discussion

14:30 - 14:45 Coffee Break

14:45 - 16:00 Heterogeneous Cores (Optimisation in Stream Processing and Neural Networks)
14:45 - 15:10 Alexandros Koliousis (Imperial College London): SABER: Window-Based Hybrid Stream Processing for Heterogeneous Architectures
15:10 - 15:30 Valentin Dalibard (Univ. Cambridge): Modern Systems for Neural Networks
15:30 - 16:00 Discussion

16:00 - 16:30 Discussion of future vision of data processing stack from hardware, low-level programming, parallel programming platform, to applications

16:30 - 17:30 Closing + wine