Impressions of UoD UG apprentice Ansh Kumar about publishing research paper

***Information:* On April 16, Taylor & Francis published a journal open-access research paper online:**

Zaitsev, D. A., Ajima, Y., Bartlett, J. F. C., & Kumar, A. (2025). 3D multicore CPU vs GPU on sparse patterns of Sleptsov net virtual machine. International Journal of Parallel, Emergent and Distributed Systems, 1–21. https://doi.org/10.1080/17445760.2025.2490148

Sleptsov Net Computing (SNC) is a novel paradigm that mends imperfections of modern computers offered by Dr. Dmitry Zaitsev, Senior Lecturer of The University of Derby (UoD), and supported by wide-known supercomputer expert from Fujitsu, Yuichiro Ajima, the creator of fast network Tofu D Interconnect in the shape of 6D torus for the most efficient supercomputer in the world Fugaku, Japan. The paper further develops SNC. Two UoD UG Rolls-Royce apprentices, Jaden Bartlett of the first year and Ansh Kumar of the second year joined the research developing SNC virtual machines on multicore CPU and GPU, correspondingly, their software uploaded for public use on GitHub. SNC uses computing memory hardware and mathematically proves correctness of software, and applies graphical concurrent programming language of Sleptsov nets called after a prominent Ukrainian scientist Anatoly Sleptsov.

Ansh Kumar shares impressions of his research experience

“Honestly, it was a bit overwhelming at the start; I’d only just been introduced to Sleptsov nets at uni a couple of weeks before, so I had to dive into a lot of independent reading. But the papers and resources Professor Zaitsev pointed me to the spot on and made the learning curve manageable. My task was to optimise GPU performance, and one guide he recommended, Mark Harris's NVIDIA CUDA Reduction tutorial, turned out to be a game-changer. I applied several of the techniques to improve the SN-VM-GPU benchmarks, and seeing that effort result in measurable speed-ups was incredibly rewarding. Overall, this project gave me my first real taste of academic research, and it’s been such a valuable, challenging, and honestly quite fun experience. I'm truly thankful to Professor Zaitsev for his guidance and belief in me.”

Please download, read and share the paper, which open-access publication was supported by UoD that provides creative atmosphere to develop abilities of students and make their talents shine world-wide!

We are grateful for use of the computing resources from the Northern Ireland High Performance Computing (NI-HPC) service funded by EPSRC (EP/T022175)