



P A Z Y  
EXCELLING IN SCIENCE

## A new task force in supercomputing is looking for extraordinary Master's students for pioneering scientific computing research

Our main effort is to enable large-scale scientific applications sustainably and efficiently on supercomputing systems. The task force includes inter-university cooperation of researchers in the field of distributed systems and a strong collaboration with the Scientific Computing Lab at NRCN – to turn this vision from theory to practice.

Applicants Portal: <https://forms.gle/2D3ZcNU5m2xm3PBs9>

High performance computing (HPC) systems are a critical resource for scientific research and advanced industries. As the demand for compute-intensive calculations and simulations increases, huge amounts of data should be analyzed, manipulated and stored. HPC architectures are becoming more complex, thus fault rates incurred by large-scale computations increase while the penalty (in terms of runtime) incurred by each fault become costlier. This increases the need for efficient algorithms that correctly recover from such faults. Our research investigates ways of utilizing emerging Non-Volatile Random-Access Memory (NVRAM) technologies and devices in efficient recoverable high-performance scientific applications. Towards this goal, we devise recoverable versions of common algorithms and leverage them to implement recoverable scientific applications. Such applications would obviate the need for checkpointing and even avoid Distributed File Systems entirely. This would lead to enormous savings in money, power and computation time, thus constituting a significant step for the scientific computing towards the exascale era.

Prof. Hagit Attiya – Technion

Prof. Danny Hendler – Ben-Gurion University of the Negev

Gal Oren – Technion and Negev Nuclear Research Center (NCRN)

Harel Levin, Matan Rusanovsky, Yehonatan Fridman – The Scientific Computing Lab, NRCN

This research is supported by Pazy grant 226/20

