



CS Assistant Professor Wins International Award

The [Gordon Bell Prize](#) rewards innovations in high-performance computing (HPC) applications in science, technology, and data analytics. Awarded annually since 1987, it has recognized feats such as tempering Amdahl's Law and the movement from shared- to distributed-memory systems. Within the HPC community, the Gordon Bell Prize captures '[what is possible in our time in history, and in algorithms to "bring the future closer."](#)'

Assistant Professor Sharlee Climer, along with six collaborators from Oak Ridge National Laboratory (ORNL), Yale University, and the US Department of Energy, have been awarded the Gordon Bell Prize for their HPC project aimed at capturing combinations of genetic variants associated with opioid addiction and other complex traits. The team, led by Daniel Jacobson, Chief Scientist for Computational Systems Biology at ORNL, is leveraging efficient algorithms to analyze massive datasets, including one provided by the US Veterans Administration's and Department of Energy collaboration, MVP CHAMPION, that includes genetic data for 600,000 veterans and medical records for 23 million people.

The team is using a network-based approach in which nodes represent genetic variants and edges represent pairwise and 3-way correlations between these variants. They recently [broke a world record](#) while computing these [Custom Correlation Coefficients](#). Using tensor cores and mixed-precision operations, they were able to compute 2.36 billion billion calculations per second, thereby breaking the exascale barrier.

The Gordon Bell Prize is sponsored by the Association for Computing Machinery (ACM) and awarded during the International Conference for High Performance Computing, Networking, Storage and Analysis (SC).