**NEWS RELEASE**

**Contacts**:     Jim Ormond
                  212-626-0505
                  ormond@hq.acm.org

### Marcin Copik, Masado Alexander Ishii, and Shelby Lockhart Named Recipients of 2022 ACM-IEEE CS George Michael Memorial HPC Fellowships

**New York, NY**, **October 19, 2022** – ACM, the Association for Computing Machinery, and the IEEE Computer Society announced today that Marcin Copik of ETH Zurich and Masado Alexander Ishii of the University of Utah are the recipients of the 2022 ACM-IEEE CS George Michael Memorial HPC Fellowships. Shelby Lockhart of the University of Illinois at Urbana-Champaign received an Honorable Mention. Copik is recognized for incorporating the Function-as-a-Service programming model into HPC applications and bringing high-performance into serverless to cut costs and increase efficiency of supercomputing. Ishii is recognized for developing lightweight, dimension-parameterized, parallel meshing algorithms with a focus on scalability and improving total time-to-solution for engineering applications. Lockhart is recognized for contributions in scalable iterative solvers using node-aware communication and low synchronization algorithms to reduce communication bottlenecks on supercomputers.

**Marcin Copik**
Copik's research bridges the gap between high-performance programming and serverless computing. He is bringing the Function-as-a-Service (FaaS) programming model into the HPC domain by developing high-performance software and hardware solutions for the serverless stack. By solving the fundamental performance challenges of FaaS, he is building a fast, efficient programming model that brings innovative cloud techniques into HPC data centers, allowing users to benefit from pay-as-you-go billing and helping operators to decrease running costs and their environmental impact.

To that end, he has been working on tailored solutions for different levels of the FaaS computing stack, from computing and network devices up to high-level optimizations and efficient system designs. He has also proposed a new design for serverless platforms that applies HPC practices such as low-latency networking, data locality, and efficient communication.

**Masado Alexander Ishii**
Ishii is the main developer for the University of Utah's Dendro-KT framework for four-dimensional adaptivity and parallel in time formulations. Given the ever-increasing levels of parallelism in the largest

machines, parallelizing across space is not sufficient—and in many cases the inability to parallelize in time is the biggest bottleneck for several important problems. The Dendro-KT framework addresses this problem and also simplifies the development of high-order in time and spatially varying time increments, which are important to limit the computational work needed for a given accuracy.

Working with collaborators, Ishii has also been involved in developing methods and codes for large-scale fluid simulations around complex objects, including a case with multiple complex objects, to evaluate COVID-19 transmission risk in classrooms.

**Shelby Lockhart**

Lockhart has made contributions in parallel communication, core parallel numerical algorithms, and advancing capabilities of large-scale predictive simulation. Her focus has been on modeling performance in heterogeneous settings, with an eye on redesigning the message communication "under-the-hood" (aspects of the high-performance architecture that are not readily visible) as well as looking at fundamental algorithmic changes in order to significantly improve achievable performance.

Among her research highlights, she has provided detailed communication models to drive the selection of message routing, yielding impressive improvements across a range of problem types. She has also presented a strategy for achieving impressive reductions in communication costs in graphic processing unit (GPU) systems by communication through the host, accounting for different data volumes and GPU counts. Additionally, Lockhart's work on fixed point solvers has made important contributions to the Suite of Nonlinear and Differential/Algebraic Equation Solvers (SUNDIALS) project.

**About the ACM IEEE CS George Michael Memorial Fellowship**

The ACM-IEEE CS George Michael Memorial HPC Fellowship is endowed in memory of George Michael, one of the founders of the SC Conference series. The fellowship honors exceptional PhD students throughout the world whose research focus is on high performance computing applications, networking, storage, or large-scale data analytics using the most powerful computers that are currently available. The Fellowship includes a $5,000 honorarium and travel expenses to attend the SC conference, where the Fellowships are formally presented.

**About ACM**

ACM, the Association for Computing Machinery, is the world's largest educational and scientific computing society, uniting computing educators, researchers, and professionals to inspire dialogue, share resources, and address the field's challenges. ACM strengthens the computing profession's collective voice through strong leadership, promotion of the highest standards, and recognition of technical excellence. ACM supports the professional growth of its members by providing opportunities for life-long learning, career development, and professional networking.

**About SC**

SC, the International Conference for High Performance Computing, sponsored by ACM and IEEE-CS offers a complete technical education program and exhibition to showcase the many ways high performance computing, networking, storage and analysis lead to advances in scientific discovery, research, education and commerce. This premier international conference includes a globally attended technical program, workshops, tutorials, a world class exhibit area, demonstrations, and opportunities for hands-on learning.

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