

Aspiring PI Info:

- Martin Kong
- Assistant Professor (Tenure-Track)
- The Ohio State University



THE OHIO STATE
UNIVERSITY

Research interests:

- Compiler optimizations for affine and tensor-based programs
- Mapping of affine computations for communication minimization in distributed-memory clusters
- Energy, power and wearout-aware program optimizations

Current Project(s)

Collaborative Research: PPOSS: Large: A Comprehensive Framework for Efficient, Scalable, and Performance-Portable Tensor Applications (Site-PI). Year 3/5. The PI focuses on developing communication-minimizing automatic approaches to partition and map tensor-based computations on distributed-memory clusters.

Lead Institution: Univ. of Utah.

Project Idea(s)...

- Certified distributed schedules of programs using MPI-like collectives; leverage sequence of collectives from data-flow perspective together with their semantics; select transformations based on rounding accumulated error or other criteria. Applicable to tensor computations, linear algebra, discrete Fourier Transforms.
- Will benefit large-scale scientific applications based on MPI collectives; more complex communication sequences can be explored and validated
- Education and Outreach: Possible new course combining FMs with the compiler/ parallel/ distributed field; weekly blog describing advances; workshop co-located with conferences such as ICS, CGO.

... and possible collaborators sought

- From the Formal methods domain
- Or from both the “Formal Methods” and “The Field”. I can be a hybrid FM+Field person.

