How to Tolerate Communication Costs and How to Reduce Them

I will describe recent work in two complementary projects that each aim to diminish the impact of steadily increasing communication costs on scalable systems. The first project, Toucan, uses domain specific translation to restructure MPI applications to tolerate communication costs. The performance of Toucan's translated code is competitive with that of manual restructuring. The second is a PGAS library, UPC++, that leverages the GASNet-EX communication library to deliver close to the metal communication performance.

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The Computing Colloquium Series is sponsored by the Graduate College, College of Arts and Sciences and College of Engineering.