

Nikoli Dryden

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EDUCATION	BS Computer Science 2010 - 2014 University of Illinois at Urbana-Champaign <i>Minor in Mathematics, James Scholar</i>
	PhD Computer Science 2014 - present University of Illinois at Urbana-Champaign Advisor: Prof. Marc Snir
PROFESSIONAL	Lawrence Livermore National Laboratory Livermore, CA <i>Computation Intern</i> May - August, 2016, 2017, 2018 Scalable training of DNNs on supercomputers, performance analysis/optimization, and algorithm development (LBANN, Aluminum). Applying deep learning to scientific and simulation applications.
	Raytheon Centers of Innovation Arlington, VA <i>Intern</i> May, 2015 - August, 2015 Cloud-based analysis. Large-scale indexing and search of unstructured data with Python and Amazon EMR.
	University of Illinois Urbana, IL <i>Research Assistant for Prof. Marc Snir</i> May, 2014 - present C++11 runtimes, tools, and applications for exascale supercomputing (PPL). Scalable training of DNNs on supercomputers, algorithms/analysis to accelerate training (LBANN, Aluminum).
	Lawrence Livermore National Laboratory Livermore, CA <i>HEDP Intern; Offsite Collaborator</i> May, 2012 - May, 2015 Developed an open-source parallel debugger for MPI applications (PGDB). Work on scientific applications.
	NCSA/XSEDE Urbana, IL <i>SPIN Fellow; Advanced SPIN Fellow</i> January, 2013 - May, 2014 Improved scalability and platform support for PGDB. Mentored an undergraduate SPIN Fellow on PGDB.
	KRR Group Urbana, IL <i>Undergraduate Researcher</i> February, 2012 - January 2013 Graphical Kripke models.
	PROJECTS/ INVOLVEMENT
LBANN May, 2016 - present Open-source toolkit for training DNNs, optimized for large-scale training on supercomputers. Developed optimized communication routines, novel communication quantization, data-parallel training approaches, and model-parallel distributed convolution algorithms.	
PPL May, 2014 - present Experimental C++11 parallel runtime for exploring tradeoffs in upcoming exascale supercomputers. Developed energy band Monte Carlo, Barnes-Hut, and BFS proxy applications.	
PGDB May, 2012 - May, 2016 Open-source debugger for MPI applications at scale, implemented in Python and C. Collaborated with Prof. Marc Snir to further scalability as part of my senior thesis.	
Association for Computing Machinery March, 2013 - present Treasurer of student chapter of the ACM at UIUC, 2013-2014. Managed funds for the chapter and the Reflections Projections 2013-2018 conferences.	
SIGArt/SIGAI September, 2010 - May, 2015 AI projects. Chair from spring 2011 to 2014. Projects include multi-touch gesture recognition using HMMs (won 1 st place “Defining the Future” at Engineering Open House 2011) and computer vision for quadrotors.	
SKILLS	Languages C/C++, Python, Java, MATLAB, L ^A T _E X, x86, Common Lisp, Lua, others Frameworks/APIs MPI, POSIX, CUDA, LBANN, PyTorch, cuDNN, OpenMP, qthreads, others Tools/Technologies Emacs, GDB, Valgrind, Vtune/nvprof, LaunchMON, MRNet, others