

KAPIL ARYA

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ACADEMICS

Northeastern University, Boston, MA Fall 2006 - Present

- Ph.D. in Computer Science
- Research Interests: Operating Systems, High Performance Computing and Related Areas.

J N Vyas University, Jodhpur, Rajasthan, INDIA July 2004

- Bachelor of Science (Triple Major: Computer Science, Physics, Mathematics)

WORK HISTORY

VMware, Inc. Summer 2008, 2009, 2010

MTS Intern, Virtual Machine Group, R&D

- Worked on Virtual Machines' double page swapping problem.

Northeastern University

Research Assistant, Sep 2008 - Present

- DMTCP project
- Reversible Debugger project

Teaching Assistant, College of Computer and Information Science Jan 2008 - Apr 2008

- Assisting in conducting an undergraduate class on General Purpose computing on GPUs.
- Help students in designing parallel programs and debug them.

Avidyne Corporation Jan - Aug 2007

Software Engineer Coop, Systems and Engines Group

- Designed and developed Graphical Pages for mainstream application using SceneGraphs and DataGraphs in C++.
- Debugged and enhanced Checklist Editor Program, a utility software written in Visual C++.
- Contributed in Code Review during Final Design Review phase of product.
- Implemented part of product's configuration phase and miscellaneous system level operations.

PUBLICATIONS

- "DMTCP: Transparent Checkpointing for Cluster Computations and the Desktop," J. Ansel, K. Arya, G. Cooperman, In *Proc. of IEEE International Parallel and Distributed Processing Symposium (IPDPS'09)*, IEEE Press, 2009.

RESEARCH / PROJECTS

Distributed Multi-Threaded Checkpointing (DMTCP): Sep 2007 - Present

- DMTCP is a tool for transparently checkpointing the state of a distributed program spread across many machines without modifying the user's program or the operating system kernel.
- The checkpoint image can later be used to restore program in case of node/process failure or can be migrated to another homogeneous system.

Static Performance Evaluation for Memory Bound Computing: Jan 2008 - Apr 2008

- Developed model for static evaluation of memory-bound general purpose programs written for NVIDIA CUDA architecture. The programming model is an extension of C Language and uses NVCC compiler (NVIDIA version of GCC).
- Can be used to predict the runtime and optimize the memory-bound program by looking at the pseudocode.

Linux Device Driver for Ethernet Card and Virtual Networking: Sep 2006 - Dec 2006

- Studied Linux Device Driver for Ethernet Cards and modified a device driver to implement virtual network on a single machine by creating multiple Ethernet cards virtually.
- Can be used to develop and test networking applications on a standalone Linux system.

Hand Written Hindi Character Recognizer: Oct 2005 - Jan 2006

- Developed software to recognize hand written Hindi characters drawn on-screen with the help of mouse/stylus.
- Uses Artificial Neural Networks and hence requires a little training beforehand.
- Can be further enhanced to read entire handwritten documents and thus can help in digitalizing handwritten documents.

Scrabble Game Playing Robot: Mar 2005 - Jul 2005

- Created the interfacing circuit, device drivers and mounted various sensors on to a robot built to play the word game Scrabble with a human being.
- Can be enhanced to play three different games with three different players at the same time without any kind of cheating.

Semi-Autonomous Robotic Car, The Survivor: Oct 2004 - Jan 2005

- Designed the mechanical structure, electronic control circuit of a semi-autonomous robotic car and wrote the device driver and software for controlling it using a PC.
- Won “Best Mechanism Ideas of Implementation” award in the competition “Survivor The International Challenge” during TECHFEST-05 organized by Indian Institute of Technology - Bombay.

PC-Remote Control System: March 2005

- Wrote application in C Language to operate the PC using a general IR Remote Control in MS-DOS.
- Used the Terminate and Stay Resident (TSR) functionality to receive and interpret the IR signals and execute the corresponding program.

GRADUATE COURSEWORK

- Parallel Computing · Computer Systems · Advanced Algorithms · Programming Languages · Theory of Computation · Computer Networks