Dineshkumar Bhaskaran

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SUMMARY

- Expert in high-performance parallel computing with a focus on algorithm parallelization, optimization, and benchmarking in areas like AI/ML, image processing, and distributed storage.
- Extensive background in storage virtualization, Linux kernel development and board bring-ups.

EMPLOYMENT

SENIOR MEMBER OF TECHNICAL STAFF **AMD INDIA** **AUG 2019 - TILL DATE**

Rapids – Accelerated Data Science for ROCm:

- Ongoing activity for adopting Rapids projects for implementing popular pyData libraries for data science application on AMD GPU for ROCm stack. Owner for rapids' CUDF projects like rapids-cmake, rapids memory manager (RMM), and NVComp. CUDF is a close substitution for pandas.

MLPerf Inferencing

- Implemented python reference code for models resnet50, yolov4 and Bert on AMD Instinct GPUs for multiple backends like pytorch, tensorflow, Tensor virtual machine (TVM) and MIGraphX. Implemented C++ lightweight inference server for resnet50 on TVM and improved performances by 51.5%.

ROCm Clang compiler

- ROCm Compiler Support maintainer from Aug 2019 to Sept. 2021.
- Implementation of Multithreading and in-memory compilation support for AMDs lightning compiler (based on LLVM). In-memory compilation improved overall compilation process by 1.07% on Linux and ~29% on windows.

PRINCIPAL ENGINEER **CAPGEMINI ENGINEERING (PREVIOUSLY ARICENT)** **OCT 2017 – JUL 2019**

- Led efforts to create an accelerated storage I/O library using GPUs. Developed parallel and improved erasure-code algorithms in CEPH. This work was presented at SNIA SDC India and then Santa Clara under the title "Accelerated Erasure Coding: The New Frontiers of Software-Defined Storage – 2018".
- Led a team to create software defined radio solution for Aricent. Involved in offloading FFT algorithm in OpenAirInterface 4G stack with NVIDIA GPUs and Xilinx FPGAs.

PRINCIPAL ENGINEER **CANON INC** **MAR 2010 - OCT 2017**

- Led a team to create an efficient medical image processing library for Canon medical apparatuses. Parallelized and optimized Image registration algorithm components like Pre-processing algorithms, Optimizers (Powell, LM, GD, SGD), Metrics (MI, NMI, RIU, SSD), transformation algorithms, and Resampler.
- Managed and lead a team, that maintained and enhanced Linux based OS for Canon embedded products. Involved in porting Linux kernel and essential system applications to various ARM based SoCs.

SOFTWARE ENGINEER **EARLY EXPERIENCE (BROCADE COMMUNICATIONS, TATA ELXSI)** **SEP 2003 - MAR 2010**

- Worked on Brocade Storage Application Services. SAS service include storage virtualization, online data migration, CDR, and CDP. Owner for virtualized initiator module in SAS solution.
- Worked on Target Mode driver for LSI logic FC HBAs based on LSI-Logic Fusion message passing technology to act as a virtualized storage box.

EDUCATION

- Deep Learning Theory and Practice, IISc Bangalore, India
- M.S Software systems 2006-2009, BITS Pilani, India
- Bachelor of Technology, Computer Engineering 1999-2003, University of Calicut, Kerala, India.

LANGUAGES AND TECHNOLOGIES

Programming Languages: C, HIP, OpenCL, familiar with CUDA, C++, Python, PTX, HLSL, ARM, X86 assembly.
Protocols stacks: FC, Familiar with SCSI, USB, OpenAirInterface 4G stack in Linux Kernel.
Tools and ASICs: ROCm and GNU Toolchain, Xilinx ZC-702/706, TI AM437x, AMD Instinct GPUs gfx90x series.

SELECT PUBLICATIONS

- Accelerated Erasure Coding: https://www.snia.org/events/storage-developer/presentations18.
- https://www.networkcomputing.com/storage/how-erasure-coding-evolving/155400422
- http://www.tldp.org/LDP/LG/issue93/bhaskaran.html