Shailesh Tripathi

Email: tripathi.52@osu.edu 1050 Benton Street, Santa Clara, CA-95050 **Phone:** +1 (614) 929-0079
LinkedIn: https://www.linkedin.com/in/shailesh-tripathi-7b874b103 **Github:** https://github.com/shailesh210

EDUCATION

The Ohio State University, Columbus **Aug 2017 - May 2019**
Master of Science in Computer Science & Engineering GPA: 4.0/4.0

Indian Institute of Technology (B.H.U.), Varanasi **Jul 2013 - May 2017**
Bachelor of Technology in Electronics Engineering **CGPA:** 8.44/10

WORK EXPERIENCE

GPU Software Engineer Intern - Roche Sequencing Solutions **May 2018 - Current**

- Designing and developing a **parallel version** of **SPICE circuit simulation software** that can solve multiple light-weight circuits in parallel. This version of **SPICE** software is being developed from scratch using C++ and CUDA involving heavy linear algebra. [Circuit Simulation software, Linear Algebra, CUB, Thrust]
- Performing this on the local server in parallel instead of performing serially in cloud will reduce the cost by **1000 times**.
- Developed a GPU monitoring tool using **NVPROF** library.

Graduate Research Assistant - Multi Physics Interactions Research Group **Aug 2017 – May 2019**

- Developing **Computational Fluid Dynamics Software** using **Principal Component Analysis (PCA)** of large-datasets.
- **Role**: Parallelization of the compute-intensive linear-algebra segment of the software using **CUDA** over **MPI** (**C++)** to be deployed on **U.S. DoD cluster** making it **10x** faster. [Computational Fluid Dynamics, Linear Algebra, MPI]

INTERNSHIPS

Google Summer of Code- India **May-August 2016**

- Enhanced the portability of **GeNN** (GPU-enhanced Neuronal Network) simulation software by adding **OpenCL** support along with original **CUDA (C++)** implementation of the **Neuronal Network** (Spiking Neural Network).
- OpenCL support made the software **universally compatible** for every vendor-independent GPU hardware.
- Collaborated with team at **University of Sussex** working for **International Neuroinformatics Coordinating Facility**.

Citigroup Inc. – Pune, India **May-July, 2016**

- Designed and implemented **REST API (JAVA)** to access present Database Management System.
- Any simple platform-independent **HTTP request** could be used for query.
- Eliminated need for multiple libraries (C++, JAVA etc.) which improved client adoption and increased productivity.

Defense R&D Organization – Jodhpur, India **May-June 2015**

- Developed **GPU-Accelerated Tomographic Imaging Software** to be rendered on existing CT-scan machine, resulting in a **100x** faster parallel implementation.
- Designed and implemented parallel version of **FFT** followed by **Filtered Backprojection Algorithm** on **NVIDIA GPU** using **CUDA 7.0 Toolkit** and **OpenGL** in **C++.**

EXPLORATORY PROJECTS

Machine Learning:

- Implemented **k-means clustering** algorithm using **kd-tree** on **GPU**.
- Developed face recognition software using **Principle Component Analysis**(**PCA**) (**MATLAB**).

Digital Signal Processing:

- Implemented **Sparse Fourier Transform** for spectrum sensing and designed a parallel algorithm for the same (**MATLAB**).
- Designed pipelined **Canny Edge detection** and **Harris Corner Detection** on FPGA using **Verilog**.

App Development: Designed and developed "**Hover Mouse**" android app to enable a mobile phone to function as a mouse without the need of a surface to detect motion by extracting **FAST** features to implement **optical flow (Lucas-Kanade algorithm).**

- Developed a Virtual Reality android app to capture and render 3-D image of an object using **OpenCV** library.

TECHNICAL SKILLS AND INTERESTS

- **Programming Languages**: C++(proficient), JAVA(intermediate) , Python(proficient), C(basic), C#(intermediate), JavaScript(intermediate), Verilog(basic)
- **Libraries and Software**: CUDA, OpenCL, MPI, OpenCV, OpenGL, TensorFlow, MATLAB, Visual Studio, Android Studio
- **Open source project contributions** - GeNN, BRL-CAD, SciRuby-nmatrix
- **Operating Systems:** Windows, Linux, Mac