Amlesh Kashyap

+91-767 785 3656
amlesh@caos.iisc.ernet.in
amleshkashyap.github.io

Education

2015 **National Institute of Technology**, *Patna, Bihar, Bachelors of Technology in Computer Science and Engineering - CGPA: 7.77/10.*

2011 **DAV Public School**, *Khagaul, Patna, Bihar, (Central Board of Secondary Education), Class XII - Percentage: 87.6.*

2009 **DAV Public School**, *Khagaul, Patna, Bihar, (Central Board of Secondary Education), Class X - Percentage: 94.8.*

Experience

Jun,2015–Present **Research/Project Assistant**, *Indian Institute of Science*, Bangalore, Karnataka, Member of Middleware and Runtime Systems Lab, Mentor : Dr Sathish Vadhiyar.

Jun,2016–Jun,2016 **Summer Student**, *Microsoft Research*, Bangalore, Karnataka, Summer School on Internet of Things, in collaboration with Indian Institute of Science.

May,2014–Jul,2014 **Summer Intern**, *Indian Institute of Science*, Bangalore, Karnataka, Member of Multiphase Flow Simulation Lab, Under the guidance of Dr Gaurav Tomar.

Projects

June, 2016 - Present **Hybrid Executions of the radiation routines in CAM5 - Evaluating asynchronous executions, proportional partitioning and pipeline executions.**, (Dr Sathish Vadhiyar, Dr Ravi Nanjundiah, Dr. P.N. Vinayachandran).
Ported major portions of the radiation routines (in CAM5), including shortwave and longwave radiations to Xeon Phi. Improved performance of radiation calculations through asynchronous executions and proportional partitioning. Exploring pipeline model of execution.
Manuscript in Preparation
Fortran, Asynchronous Offload, Proportional Partitioning, Pipelined Computations, OpenMP

Oct, 2016 - Present **G-Charm - An Adaptive Runtime System for Message-Driven Parallel Applications on Hybrid Systems.**, (Dr Sathish Vadhiyar).
Currently working upon enhancing the original research prototype.
Charm++, CUDA

Jun, 2015 - Jul 2016 **Asynchronous and Sychronous Models of Execution for High Performance of Long-wave Radiation Routine in Community Earth System Model**, (Dr Sathish Vadhiyar, Dr Ravi Nanjundiah, Dr. P.N. Vinayachandran).
Worked with the longwave radiation routine Radabs, a component of the physics routines in the Atmosphere component CAM4 of the Community Earth System Model (CESM). Explored hybrid synchronous and asynchronous models of execution using Intel Xeon Phi Accelerators (KNC)
Manuscript in review, in **Journal Of Parallel and Distributed Computing**
Fortran, Asynchronous Offload, Vectorization, Compiler Flags, Interpolation, OpenMP, R

Sep, 2016 - Present **Implementation of COOL Compiler**, (Independent Project).
Implementing a compiler for the classroom object oriented language (COOL) following the online course on Compilers.
C++, flex, COOL

Jun, 2016 **Smart Transportation - Detecting Events While Driving**, (Hackathon during Summer School on IoT).
Used accelerometer to detect sharp brakes and turns during driving, and automatically start the video recording and publish the event. Deployed on a real car.
Languages - Java, Python, Plotly, Shell Scripting, Accelerometers, Raspberry Pi, Microsoft Azure

April, 2016 - May 2016 **Optimizing Shortwaves Routines in CAM4**, (Independent Project).
Explored the asynchronous and synchronous models of execution of shortwaves routine in CAM4 of CESM. Applied several compiler optimizations in the synchronous model.
Fortran, Vectorization, Code Optimization, OpenMP

Feb, 2016 **Image Processing using CUDA, OpenCV**, (Independent Project).
Wrote an application for Gaussian and Median Blurring of images and videos on CPU and GPU, to demonstrate the speed difference. Also implemented Gaussian Blur using CUDA.
C++, OpenCV, CUDA

Feb,2015 - May,2015 **Encrypted File Transfer**, (Dr Akshay Deepak).
Created an application to ensure confidentiality of data over an ad-hoc network.
Java, AES and Diffie-Hellman Key Exchange

Sep,2014 - Dec,2014 **Mood Based Music Player**, (Prof A.S. Tewari).
Created an application to predict the mood of user based on their smartphone usage data. Wrote a music player to play songs according to the predicted mood.
Android, K-Means clustering algorithm, Eclipse

May,2014 - Jul,2014 **Heat Equation Solver and its Parallelization**, (Dr Gaurav Tomar).
Created a solver for second order heat equation, using Conjugate Gradient, Gauss-Seidel and Successive Over Relaxation methods. Parallelized the Conjugate Gradient and ran for multi-core computers and clusters.
C, MPI, CSR storage, VisIt, GNU Plot

Jun,2013 **ATM Simulator**, (Daneyal Lari).
Created a simulation of an ATM with features similar to real-world ATM machine.
Java, JDBC

Skills

Languages C/C++, Fortran, Java, Python, MPI, OpenMP, CUDA, R, Javascript, HTML, Charm++, CSS

Databases MySQL, Oracle

Script Bash

Mobile Android

Tools Eclipse, Git, Netbeans, GNU Octave, GNU Plot, GNU Visit, HPC Toolkit, Intel VTune Amplifier, Microsoft Visual Studio, OpenCV, Vim, LiQUiD, Plotly

Typesetting LaTeX

Coursework Design and Analysis of Algorithms, Data Structures, Formal Languages and Automata Theory, Database Systems, Operating Systems, Software Engineering, Discrete Mathematical Structures and Graph Theory, Pattern Recognition, Parallel Computing, Distributed Computing, Machine Learning (Coursera), Automata (Coursera), Cryptography 1 (Coursera), Parallel Programming (Audited at IISc), Quantum Mechanics and Quantum Computation (edX)

Extra Curricular

Open Day	Demonstrated a simulation of the Mandelbrot set using single and 32 threads on CPU. Part of Open Day 2016 at Indian Institute of Science
Brown Belt	Brown Belt Developer Status on Intel Developer Zone
RMO	Qualified the Regional Mathematical Olympiad conducted by Homi Bhabha Centre for Science Education in 2010.
Indian Bansuri	Completed a Junior Diploma in Classical Music on Flute from Prayag Sangeet Samiti, Allahabad. Senior Member of Music Club at my college.
Corona 2013	Member of Resource and Planning team during the annual technical festival of my college, Corona in 2013.