

## 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.**

## Publications

- Dec 2016 **Asynchronous and Synchronous Models of Executions on Intel Xeon Phi TM Co-processor Systems for High Performance of Long Wave Radiation Calculations in Atmosphere models.**  
Amlesh Kashyap, Sathish Vadhiyar, Ravi Nanjundiah, P.N. Vinayachandran  
Accepted in the Journal of Parallel and Distributed Computing

## 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 - **Asynchronous and Synchronous Models of Execution of Longwave Radiation Routine**, (Dr Sathish Vadhiyar, Dr Ravi Nanjundiah, Dr. P.N. Vinayachandran).  
 Jul 2016 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)  
*Fortran, Asynchronous Offload, Vectorization, Compiler Flags, Interpolation, OpenMP, R*
- Sep, 2016 - **Implementation of COOL Compiler**, (Independent Project).  
 Present 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 - **Optimizing Shortwaves Routines in CAM4**, (Independent Project).  
 May 2016 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 - **Encrypted File Transfer**, (Dr Akshay Deepak).  
 May, 2015 Created an application to ensure confidentiality of data over an ad-hoc network.  
*Java, AES and Diffie-Hellman Key Exchange*
- Sep, 2014 - **Mood Based Music Player**, (Prof A.S. Tewari).  
 Dec, 2014 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 - **Heat Equation Solver and its Parallelization**, (Dr Gaurav Tomar).  
 Jul, 2014 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, Charm++, LaTeX
DB, Web	MySQL, Oracle, HTML, Javascript, CSS
Script, Mobile	Bash, Android
Tools	Eclipse, Git, Netbeans, GNU Octave, GNU Plot, GNU Visit, HPC Toolkit, Intel VTune Amplifier, Microsoft Visual Studio, OpenCV, Vim, LiQUId, Plotly
Coursework	Design and Analysis of Algorithms, Data Structures, Formal Languages and Automata Theory, Discrete Mathematics and Graph Theory, Operating Systems, Software Engineering, Pattern Recognition, Parallel Computing, Distributed Computing, Machine Learning (Coursera), Automata (Coursera), Cryptography (Coursera), Parallel Programming (Audited at IISc), Quantum Mechanics and Quantum Computation (edX)

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## Extra Curricular

- HiPC'16 Received full funding to attend the International Conference on High Performance Computing, Data and Analytics, held at Hyderabad in December 2016
- Open Day, Demonstrated a simulation of the Mandelbrot set using single and 32 threads on CPU.  
IISc Part of Open Day 2016 at Indian Institute of Science
- Brown Belt Brown Belt Developer Status on Intel Developer Zone
- JEST'16 All India Rank 114 in Joint Entrance Screening Test for Theoretical Computer Science
- Indian Flute Completed a Junior Diploma in Classical Music on Flute from Prayag Sangeet Samiti, Allahabad. Senior Member of Music Club at my college.
- Corona'13 Member of Resource and Planning team during the annual technical festival of my college, Corona in 2013.
- RMO Qualified the Regional Mathematical Olympiad conducted by Homi Bhabha Centre for Science Education in 2010.