

# Maksudul Alam

2609 Oleander Way, Apt 121, Knoxville, TN 37931

(540) 505-2675

✉ [alamm@ornl.gov](mailto:alamm@ornl.gov)

🌐 [maksudsite.appspot.com](http://maksudsite.appspot.com)

## EDUCATION

### Virginia Tech

**Ph.D.**, in *Computer Science*

Graduation: **October 2016**

**Advisors:** [Madhav Marathe](#), [Maleq Khan](#)

### Bangladesh Univ. of Engg. & Tech.

**B.Sc.**, in *Computer Science and Engineering*

Graduated: 2007

## AWARDS

- Best Paper Award Finalist (**SC' 2016**)
- Dean's List (All Undergrad Semesters)
- University Scholarships

## RESEARCH INTERESTS

HPC | Parallel Algorithms | Distributed Systems | Big Data Analytics

## SKILLS

### PROGRAMMING

C/C++, Java, C#, Python, Scala

### PARALLEL SYSTEMS

MPI, CUDA, OpenMP, Apache Spark, GraphX, Map-Reduce

### MISC

MATLAB, R, OpenGL, Gephi, VisIt, D3

### EXPERTISE

- 13+ years of C/C++ & Java experience
- 5+ years of experience in MPI
- 3 years in enterprise software development (C#, JavaScript, ASP.NET, J2EE)
- Solid knowledge of CUDA and GPU based programming
- Solid understanding of OpenMP, Spark, and Map-Reduce based systems

## COURSES

- Theory of Algorithms
- Advanced Parallel Computation
- Online Algorithms
- Data Mining Large Networks
- Statistics in Research

## ACTIVITIES

- President, Association of Bangladeshi Students at Virginia Tech (2014-15).

## EXPERIENCE

### Oak Ridge National Laboratory

#### Postdoctoral Research Associate

Dec., 2016 – Present

Research Intern

May-Aug., 2016 / May-Aug., 2015

- Designed and developed GPU-based algorithms in CUDA

### Network Dynamics and Simulation Science Laboratory

Graduate Research Assistant

Aug. 2011 – Oct. 2016

- Working on Spark-based parallel algorithms
- Devised HPC-based parallel algorithms for network science
- Worked on agent-based parallel simulator for biological systems
- Developed web-based network visualization tools

### Commlink Info Tech, Dhaka, Bangladesh

Senior Member, R&D

2009 – 2011

Member, R&D

2007 – 2009

- Worked on enterprise banking solutions such as *Automated Check Processing System*, *Mobile Banking*, and *Electronic Funds Transfer Network*
- Developed H/W drivers for *WiMAX base stations* and *Check scanners*

## SELECTED RESEARCH PROJECTS

### ENteric Immunity Simulator (ENISI)

2011 – Present

- A large-scale agent based simulator of immune systems using MPI/C++
  - Capable of simulating hundreds of millions of individual cells
- Worked on optimization, sensitivity analysis, and parameter estimation
- (*Published a book chapter, three journal papers, and a conference paper.*)

### Massive Random Networks Generators

2012 – 2016

- Designed and developed MPI-based algorithms for generating massive random networks using various models including *preferential attachment*, *Chung-Lu*, *stochastic block*, and *block two-level Erdős-Rényi*
  - Can generate networks with hundreds of billion of edges in few minutes
- Developed novel parallel load balancing and partitioning techniques
- (*Published a book chapter, a journal paper, and four conference papers.*)

### GPU Based Algorithms

2015 – Present

- Designed and developed a GPU-based index searching algorithm
  - Supports both point and range queries efficiently
  - Outperforms existing index searching algorithms in the GPU
- (*Submitted an article.*)

### Network Visualization

2013 – 2014

- Developed a web-based graph visualization tool for network analysis and mining with hundreds of thousands of nodes and edges
- (*Published a conference paper.*)

## SELECTED OTHER PROJECTS

**WiMAX Base Station:** Service Flow and Data-path module 2007-2008

**Electronic Funds Transfer Network:** for Banking Sector 2010-2011

**Mobile Banking Solutions:** designed client & server 2008-2011

**Automated Check Processing System:** Scanner Drivers 2009-2011

**Electronic Voting Machine:** using  $\mu$ -controller interfacing 2007