

# Md Taufique Hussain

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## RESEARCH INTERESTS

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High Performance Computing, Parallel Computing, Graph Algorithms and Learning

## EDUCATION

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- **Indiana University** Bloomington, IN, USA  
*Ph.D. in Computer Engineering* January 2019 - Present
- **Bangladesh University of Engineering and Technology** Dhaka, Bangladesh  
*B.Sc. in Computer Science and Engineering* July 2014

## WORK EXPERIENCES

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- **Intelligent Systems Engineering Department, Indiana University** Bloomington, IN  
*Research Assistant* January 2019 - Present
- **Pathao Limited** Dhaka, Bangladesh  
*Software Engineer* June 2018 - November 2018
- **The Maple Lab** University of Alberta, Canada  
*Volunteer Research Intern* May 2018 - August 2018
- **Augmedix Inc.** Dhaka, Bangladesh  
*Software Engineer* August 2017 - March 2018
- **Mukto Software Limited** Dhaka, Bangladesh  
*Software Engineer* July 2014 - July 2017
- **Code Testing Labs** Dhaka, Bangladesh  
*Junior Software Developer* April 2012 - December 2013

## PUBLICATIONS

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- Ariful Azad, Oguz Selvitopi, Md Taufique Hussain, John R. Gilbert, Aydin Buluc. **Combinatorial BLAS 2.0: Scaling combinatorial algorithms on distributed-memory systems.** *IEEE Transactions on Parallel and Distributed Systems (TPDS)*.
- Md Taufique Hussain, Oguz Selvitopi, Aydin Buluc, Ariful Azad. **Communication-Avoiding and Memory-Constrained Sparse Matrix-Matrix Multiplication at Extreme Scale.** *IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, 2021.
- Oguz Selvitopi, Md Taufique Hussain, Ariful Azad, Aydin Buluc. **Optimizing High Performance Markov Clustering for Pre-Exascale Architectures.** *IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, 2020.

## TECHNICAL SKILLS

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- Languages: C, C++, Python, NodeJS, Java, Golang
- Frameworks and Libraries: **OpenMP, MPI, CUDA**, Kernel Module Programming, Apache Kafka, Express.js, Sails.js, React.js, Mocha.js, Selenium, Docker
- Methodologies: Scrum, Test Driven Development, Pair Programming

## SOFTWARE

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- **CombBLAS**: A distributed-memory parallel graph library that offers linear algebra primitives targeting graph processing. Written using C++, OpenMP and MPI.
- **HipMCL**: A library to perform Markov Clustering(MCL) in HPC environments. It parallelizes popular MCL algorithm. Written using C++, OpenMP, MPI.
- **node-c-analyzer**: An open source Node.js module that analyzes C source codes and provides information like symbol table, call graph, statement lists etc.
- **node-c-parser**: Hand-written recursive-descent parser to parse C source codes and provide corresponding parse tree. An open source Node.js module.
- **node-c-lexer**: Lexical analyzer to tokenize C source codes according to the token rules of C programming language.

## LEADERSHIP EXPERIENCES

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- Artifact Description and Evaluation committee member of Supercomputing 2021.
- SCALE student volunteer (Lead student volunteer) of Supercomputing 2021.
- Regular student volunteer of Supercomputing 2020.
- Undergraduate research mentor of Luddy School of Informatics, Computing and Engineering at Indiana University since August 2020.
- Graduate student ambassador of Luddy School of Informatics, Computing and Engineering at Indiana University since January 2020.
- Instructor of Foundation in Science and Mathematics summer school of Indiana University during the summer of 2020 and 2021.
- Treasurer of Bangladesh Student Association at Indiana Univeristy for 2019-20 and 2020-21 academic year.