

# Ajay Brahmakshatriya

ajaybr@mit.edu  
Massachusetts Institute of Technology  
32 Vassar Street, MIT  
#32-G788  
Cambridge, MA (02139)  
United States

Graduate Student  
COMMIT Group  
Computer Science and Artificial Intelligence Lab  
MIT  
<https://intimeand.space>  
+1 617 401 5751

## Education

September'18-Present	<b>Ph.D. in Computer Science, Massachusetts Institute of Technology</b>	5.0/5.0
August'12-June'16	<b>B.Tech in Computer Science(Honors), IIT Hyderabad</b>	9.74/10
	Runner up to the President's Gold medal	

## Interests

Programming languages, Compiler and Systems research

## Publications

PLDI'20	<b>Universal Graph Framework: Achieving High-Performance across Algorithms, Graph Types, and Architectures</b> ( <i>Under submission</i> )
CGO'20	<b>PriorityGraph: A Unified Programming Model for Optimizing Ordered Graph Algorithms</b>
IISWC'19	<b>BHive: A Benchmark Suite and Measurement Framework for Validating x86-64 Basic Block Performance Models</b>
EUROSYS'19	<b>ConfLLVM: A Compiler for Enforcing Data Confidentiality in Low-Level Code</b>
GLOBECOM'16	<b>LWIR: LTE-WLAN Integration at RLC Layer with Virtual WLAN Scheduler for Efficient Aggregation</b>

## Work Experience

July'16-July'18	<b>Research Fellow, Microsoft Research India, Bangalore</b>
May'15-July'15	<b>Intern, Software Development Engineer, Amazon India, Bangalore</b>

## Research Projects

September'18-Present	<b>A Unified Graph Framework for Achieving High-Performance across Algorithms, Graph Types, and Architectures</b>
Advisor	<b>Prof. Saman Amarasinghe, Prof. Julian Shun</b> Generating efficient CUDA code for graph algorithms. New GraphIR for portable code generation across multiple platforms.
January'19-Present	<b>BuildIt: A type based multi-stage programming language extension for imperative languages</b>
Advisor	<b>Prof. Saman Amarasinghe</b> A type based multi-stage programming library for imperative languages like C++
July'16-July'18	<b>An Instrumenting Compiler for Enforcing Confidentiality in Low-Level Code</b>
Advisor	<b>Dr. Akash Lal, Senior Researcher, MSR India</b>

Memory partitioning and instrumentation techniques for preventing leak of confidential data in low level languages in presence of active attackers.

August'15-January'16 **LWIR: LTE-WLAN Integration at RLC Layer with Virtual WLAN Scheduler for Efficient Aggregation**

Advisor **Dr. Bheemarjuna Reddy Tamma, Professor, CSE department, IIT Hyderabad**  
Tunneling LTE RLC frames over WiFi channel for increased throughput with a scheduling algorithm that reduced waiting time and out of order delivery

## Skill Set

Programming X86/64 Assembly, C, C++  
Tools LLVM

## Academic Achievements and Experiences

- Runner up to the President's Gold medal including all departments of BTech 2016.
- Awarded the academic excellence award for 2014, 2016 during BTech.

## Extra-Curriculars

- Winner of Microsoft CTF competitions - Hackon(Winner) and Build the shield(Runner up)
- Creatives core for Elan 2015 and Web Coordinator for Elan 2014, the Cultural and Technical festival of IIT Hyderabad.
- Core member of KLUDGE and INFERO, the hacking and programming clubs of IIT Hyderabad for the year 2013-2014.

## Hobby Projects

- emu-NES - An X64 JIT emulator for Nintendo Entertainment System (MOS6502 processor) with efficient PPU rendering.
- Some of my projects are hosted at <https://github.com/AjayBrahmakshatriya>