

- **6 years of relevant experience** in software design and development. | **M.Sc Computer Science**, McGill University.
- Programming languages - *Proficient*: Python, C++, Java | *Prior experience*: X10, MATLAB.

WORK EXPERIENCE

INRO

December 2014 - present

*Senior developer**Montreal, QC, Canada*

- Contribute to research and development of new features in INRO's two major products, Emme and CityPhi.
- Built a new matrix calculator (in **Python** and **C++**) for Emme. (<http://bit.ly/1N5geA8>)
 - Achieved **1.5x** to **30x** speedup depending on expression details and hardware resources.
 - Wrote a new parser and evaluator for Emme's matrix expression language.
 - Built a memory management system to efficiently handle computations on matrices over 1GB in size.
- Data analytics for GTFS and travel smart-card data: Developed techniques and tools to visually analyze public transport smart card data (in **Python**). These tools can be used to analyze and query things like loads, delays, and stop activities.
- Maintain and develop new Python APIs for Emme's Fortran backend.
 - Design input specifications for the new APIs that are also used to interface with the GUI frontend.
 - Validate and process inputs to generate Emme macros to interface with the Fortran backend.
- Design and Develop CityPhi API for importing data from various formats like Shapefiles, OSM and GTFS. Also contribute to the core data backend (in **Python** and **C++**).

ISENCORE Technologies

September 2013 - December 2014

*CTO and co-founder**Montreal, QC, Canada*

- Implemented (in **C**) the 3D object discretization module for **Quirdity**, ISENCORE's 3D simulation engine.
- Won **first prize** in the **McGill Dobson cup** 2014 startup competition.
- Delivered the **winning pitch** to get selected as **one of the 20 startups worldwide** to present at SLUSH 2014.

McGill University

January 2012 - April 2014

*Research and Teaching**Montreal, QC, Canada*

- **Research Assistant, Sable Lab** - My research included program analysis and static compilation of dynamic languages.
 - Designed and developed (in **Java**) MiX10 : a MATLAB to X10 compiler for high-performance, under **Prof. Laurie Hendren's** supervision and with direct inputs from the X10 **design team at the IBM T.J. Watson research center**. (bit.ly/1sZ8aqJ)
 - Achieved **7 times (mean) faster** performance compared to the standard MATLAB implementation.
 - Discovered **2 bugs** and a **severe performance bottleneck** in the X10 compiler.
- **Teaching Assistant** - Program Analysis and Transformations, Compiler Design, and Introduction to Computer Systems.

Infosys Technologies Ltd.

September 2008 - August 2011

*Senior Systems Engineer**Pune, India*

- **Led** a team of 4 for **deployment performance management** for AT&T's online and mobility frontend and backend applications.
 - My team's job was to design and develop (in **C**) performance test scripts, analyze results, and troubleshoot performance issues.
 - Worked on 8 projects and they all exceeded performance SLA under peak loads.

Sun Microsystems

January 2007 - May 2008

*Intern - Student Tech Lead, APAC region/Campus Ambassador**Bangalore, India*

- Promoted from being one of the **only 27 Campus Ambassador across India** to one of the **only 5 Tech Leads worldwide**.
 - **Taught** a course on OpenSolaris at the university. Conducted webinars and developed tutorials for ambassadors worldwide.

PUBLICATIONS AND TALKS

- *Publication*: Vineet Kumar and Laurie Hendren. MiX10 : Compiling MATLAB to X10 for High Performance. In Proceedings of the 2014 ACM International Conference on **Object Oriented Programming Systems Languages & Applications (OOPSLA '14)**. (bit.ly/1sft0PU)
- *Talk*: Vineet Kumar and Laurie Hendren. MiX10 : Compiling MATLAB for high performance computing via X10 . 12th **Compiler-Driven Performance Workshop** at **CASCON 2013**. (bit.ly/1hXms8N)
- *Publication*: Vineet Kumar and Laurie Hendren. First steps to compiling MATLAB to X10 . In Proceedings of the 2013 ACM SIGPLAN X10 Workshop, **X10 '13** co-located with **PLDI 2013**. (bit.ly/18owBUI)

EDUCATION

McGill University

April 2014

*M.Sc. in Computer Science (CGPA: 3.56/4.00)**Montreal, QC, Canada*

- Master's thesis reviewed as **"Excellent"** by the external reviewer.

SASTRA University

June 2008

*B.Tech. in Computer Science & Engineering (CGPA: 8.93/10.00)**Thanjavur, India*

- Won the Dean's list scholarship for being among the **top 10%** students in the University.

SELECTED OTHER PROJECTS

- Analysis to identify complex numerical values for MATLAB programs (COMP 621 Program analysis, individual).(bit.ly/15SYKmC)
 - Developed a language to express information propagation through library function calls.(bit.ly/1ezq93q)
 - Accurate results for all the 20 benchmarks used by the McLab project.
- FreeMcLegal: An Open source license recommendation engine (COMP 762 Recommender systems, individual).(bit.ly/1m030GV)