VINEET KUMAR

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- **Over 6.5 years** of relevant work experience. | **M.Sc Computer Science**, McGill University.
- **Relocating to Toronto**, available from July.
- Programming languages - *Proficient:* Python, C++, Java. | *Prior experience:* X10, MATLAB.
- Skills and interests: System software, compilers, data analytics, distributed computing, and web backend systems.

WORK EXPERIENCE

INRO December 2014 - present
Senior developer *Montreal, QC, Canada*

- Contribute to research and development of **Emme** and **CityPhi**. Emme is a travel demand modelling system for transportation forecasting. CityPhi is a visual analytics software for large-scale spatial and mobility data.
- Wrote a **new compiler and memory management system** for Emme's matrix calculator language. Achieved **up to 30x faster** performance. It is efficient even for computations on **large matrices (over 1 GB)**. (C++ and Python)
- **Data analytics for GTFS and transit smart-card data**: Developed techniques and tools to visually analyze and query public transit data. These tools are used by clients to analyze and query things like loads, delays, and stop activities. (Python)
- Designed and developed **new Python API modules** for Emme's Fortran backend using Emme's macro language as interface.
- Designed and built Cityphi's **data import backend and API** to import geo and transport data from various formats like Shapefiles, OSM and GTFS. Also work on optimizing and extending the core data backend. (C++ and Python)

ISENCORE Technologies September 2013 - December 2014
CTO and co-founder *Montreal, QC, Canada*

- Developed the **3D object discretization** module for **Quirdity**, ISENCORE's 3D simulation engine. It generates a voxel tree and the associated data for a 3D model. (C++)(bit.ly/discretizer)
- 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 - Sable Compilers Research Lab 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 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**. (Java)(*bit.ly/getmix10*)
  - Achieved **7 times (mean) faster** performance compared to the standard MATLAB implementation.
  - Discovered 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
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 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

- 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/1papr1*)
- 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/2papr2*)

EDUCATION

McGill University April 2014
M.Sc. in Computer Science *Montreal, QC, Canada*

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

SASTRA University June 2008
B.Tech. in Computer Science & Engineering *Thanjavur, India*

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

OTHER PROJECTS

- Analysis to identify complex numerical values for MATLAB programs.(*bit.ly/iscomplex*)
  - Developed a language to express information propagation through library function calls.
- FreeMeLegal: An Open source license recommendation engine.(*bit.ly/freemelegal*)