Nicholas V. Giamblanco

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EDUCATION

University of Toronto, Toronto, Ontario — November '19
Master of Applied Science, Electrical & Computer Engineering,
Thesis: Dynamic Memory Allocation Techniques for High-Level Synthesis
Supervised by Prof. Jason H. Anderson
CGPA: 3.95/4.0

Ryerson University, Toronto, Ontario — June '17
Bachelor of Engineering, Electrical & Computer Engineering
CGPA: 3.74/4.33

PUBLICATIONS

Conference Papers

- **Nicholas Giamblanco** and Andrew Schmidt. `vlang`: A Verilog Front-End for LLVM (Under Review). In *2020 FPT*. IEEE, 2020
- **Nicholas Giamblanco** and Jason Anderson. ASAP: Automatic Sizing and Partitioning for Dynamic Memory Heaps in High-Level Synthesis. In *2019 International Conference on Field Programmable Technology (FPT)*. IEEE, 2019
- **Nicholas Giamblanco** and Jason Anderson. A Dynamic Memory Allocation Library for High-Level Synthesis. In *2019 29th International Conference on Field Programmable Logic and Applications (FPL)*. IEEE, 2019
- **Nicholas Giamblanco** and Prathap Siddavaatam. Keyword and Keyphrase Extraction Using Newton's Law of Universal Gravitation. In *2017 IEEE 30th Canadian Conference on Electrical and Computer Engineering (CCECE) (CCECE 2017)*, pages 625–628, 2017

AWARDS

Ontario Graduate Scholarship, University of Toronto	'20
University Of Toronto Fellowship, University of Toronto	'18
Edward S. Rogers Sr. Graduate Scholarship, University of Toronto	'17
DRF URE, Ryerson University	'16
Dean's List, Ryerson University	'15,'16,'17
REC, Ryerson University	'15
Entrance Scholarship, Ryerson University	'13

SOFTWARE

Languages

Procedural:	`MIPS`, `x86` and `ARM` Assembly, `C`
Functional:	`Make`, `CMake`, `Haskell`, `Matlab`
Object Oriented:	`Java`, `Python`, `Ruby`, `C++`
Markup:	`HTML`, `XML`, `DTD`, LaTeX, Markdown
Scripting:	`Javascript`, `JQuery`, `Bash`
Style Sheets:	`CSS`, `XSLT`

Databases

Relational:	`PostgreSQL`, `Oracle`, `MySQL`, `sqlite3`
Key-Value:	`MongoDB`

Website Technology

Web Frameworks:	Firebase, `Flask`, `Ruby on Rails`, `JRuby on Rails`

Misc

Big Data:	`Hadoop`, `Spark`
Cloud Computing Systems:	`AWS`
Version Control Systems:	`git`, GitHub, BitBucket
Continuous Integration Systems:	BuildBot, TeamCity
Frameworks:	Spring Framework
OS:	OSX, Windows, Linux, Android, RTOS
Compiler Frameworks:	`gcc/g++`, LLVM, Clang

HARDWARE

Description Languages:	`Verilog`, `VHDL`
Development Environments:	Xilinx ISE, Xilinx Vivado & Intel/Altera Quartus
High-Level Synthesis Tools:	LegUp, Vivado HLS, Bambu HLS
Devices:	Arduino, USRP, Raspberry Pi, Xilinx, Altera

INDUSTRY EXPERIENCE

Untether AI, Toronto, ON, CA — January '20 - Current
Compiler Engineer

- Principal Engineer for designing and maintaining Untether AI's LLVM-compiler backend.
- Independently developed the compiler-backend 6 months ahead of schedule.
- Improved code-performance through intermediate-language (IR) and instruction level optimizations.
- Increased productivity of the company by allowing software-developers to use the C and C++ Language.
- While managing a small team, I assigned tasks and provided frequent updates to ensure development met or exceeded deadlines and performance targets.

Information Sciences Institute, Arlington, VA, USA — January '20 - Current
Researcher

- Researched the performance impacts of auto-generated C/C++ compliant code for use with Vivado HLS and Bambu HLS.
- Improved the performance of HLS-generated hardware-accelerators through the automatic selection of C/C++ functions.

Information Sciences Institute, Arlington, VA, USA — June '19 - August '19
Visiting Research Assistant

- Contributed to project REAPER (Replacing Aging Electronics Rapidly) by developing a hardware description language (HDL) to LLVM compiler.

University of Toronto, Toronto, ON, CA — January '18 - August '18
Web Developer

- Responsible for recreating & revitalizing University of Toronto's Electrical and Computer Engineering group website. (`http://www.eecg.utoronto.ca/`)

LynkUp, Inc., Toronto, ON, CA — July '17 - September '17
Software Engineer

- Responsible for full-stack development of the web platform optimized to pair individuals seeking long distance travels.

DataChili, Inc., Toronto, ON, CA May '17 - July '17
Software Developer
- Development of core features of the software platform (Social Media Connector, Database Connectors, User Functionality, low level operations) and was a full-stack developer (`https://www.datachili.com/`).

Semple-Gooder Roofing Corporation, Toronto, ON, CA Dec '15 - Feb '16
Freelance Application Developer
- Developed a mobile tracking application, to track employees at work.

ACADEMIC EXPERIENCE

LegUp, University of Toronto, Toronto, ON, CA January '18 - Current
Software Developer & Contributor
- Developed LLVM-IR passes to allow dynamic memory allocation schemes to be present within LegUp.
- Developed a novel dynamic memory allocation algorithm.
- Maintained LegUp's code base through use of version control software (Github).

Ryerson University, Toronto, ON, CA Sept '15 - March '17
Researcher
- Investigating security with modern wireless communication systems, and developed a software suite to target cellular devices
- Developed the OPR website (`http://www.ee.ryerson.ca/opr/`).

TEACHING EXPERIENCE

University of Toronto, Toronto, ON October '17 - December '19
Teaching Assistant
- ECE216 - Signals and Systems
- ECE241 - Digital Systems
- ECE243 - Computer Organization
- ECE253 - Digital and Computer Systems [Head TA]
- ECE1387 - CAD for Digital Circuit Synthesis and Layout

Private Tutor, Toronto, ON September '17 - June '18
- Responsible for assisting students with all subjects at the Grade 12 level, by preparing notes, practice examples, assistive tools and micro lectures.

Ryerson University Jan '16 - April '16
Professor's Assistant
- Prepared assignment and examination questions for a Robotics Course (Course Code: ELE869).
- Assisted with the execution of computational experiments in cryptography, machine learning, and optimization.

Ryerson University Sept '15 - Sept '17
Academic Tutor
- Provided academic support for students enrolled in the Electrical & Computer Engineering program.
- Provided lessons and tutorials for students, with connections to the real world for ease of understanding