

# Nathan Verghis

Computer Science Major, Biology Minor

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## EDUCATION

### University of Guelph, Guelph — *Bachelor of Computing*

Sept 2019 - April 2022

At the University of Guelph, I was immediately immersed in the world of computer science as we begin with the most low-level language (C) on UNIX to build a strong foundation in software development.

### University of Toronto, Toronto — *Bachelor of Computer Science*

Sept 2018 - April 2019

At the University of Toronto, I learned how to handle rigorous workloads coupled with short deadlines in the frantic effort to keep pace with cutting-edge technology. Left after the first year due to financial reasons, but not without the experience and intuition they taught.

## PROJECTS

### Image to Sound — *Conversion Algorithm*

Feb 2020 - Present

Working alongside Professor David Flatla from the University of Guelph, I designed this algorithm to create a unique 1-1 mapping from pictures to sounds. This algorithm could be used from giving the blind an alternative option to experiencing vision, as well as extensions into the field of data compression.

### Digit Recognition AI — *A Machine Learning Algorithm to Recognize Hand-Written Digits*

July 2019 – Present

To get an understanding of the world of artificial intelligence, I undertook this project that most programmers start with, which led me to TensorFlow and a very basic understanding of the multi-variable calculus and statistics that surrounds every AI. In the future I plan on extending the data set to language processing by changing the network structure, thereby creating a network to read any English writing.

### Snake Game (AI in progress) — *An Old Classic With a Modern Twist*

August 2019 – Present

This began with a desire to create a new, more complex AI, but quickly turned into a rabbit hole of delving deeper into the Pygame library as I discovered the intricacies of game design. Using this project, I can design my own neural network from scratch, completely isolated from the TensorFlow tools.

## SKILLS

- Python
- Java
- C
- SQL
- JavaScript
- Swift

## AWARDS

**Second Place** in Mathletes (2014)

**Music Award (2014)**

**Honour Roll, Ontario Scholar**  
(2014 - 2018)

## LANGUAGES

English Fluent,  
French Proficient

## REFERENCES

Dr. Ritu Chaturvedi  
[chaturvr@uoguelph.ca](mailto:chaturvr@uoguelph.ca)

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Peter Wressell  
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Andre Greco  
(647) 926 - 6363

### **OhmSweeper - *The Digital Chris Hansen***

August 2020 – Present

During the 2020 HackWorks hackathon, my peers and I developed a program to detect internet predators on the website Omegle. This program impersonates a minor, lures predators in, and finally grabs their Ipv4 address which it then stores away to be later given to the authorities. On top of identifying predators, time spent on the program is also time these predators are not spending with actual humans, giving it a two-fold purpose.

### **Sudoku Solver — *A Brute Force Technique to Solve Any Puzzle $O(9^n)$***

June 2019 – Present

As my first step into complex problem solving, I designed a backtracking algorithm to find a solution for any solvable sudoku puzzle using brute force. The goal is to one day return and create an AI to solve in what will be faster than  $O(9^n)$ , as AI is a field, I am very passionate about, and continuously learning about.

### **nathan-verghis.github.io/portfolio/ — *My Portfolio Website***

Feb 2020 – Present

During my time spent applying for jobs, I decided being a software student, that it was only fitting that I should have a website to display my skills. This project was very productive, as it taught me invaluable skills and tricks of web development, as well as discovering how host pages on GitHub for free.

### **LockBox — *A Better Way to Secure Your Belongings***

September 2019 – Present

With my peers, we are currently developing an app to act as a key for a safe to provide a more secure way to store items. As well as increasing accountability in large companies, this app will also provide data interpretation so owners can view trends about who is accessing their belongings.

## **EXPERIENCE**

### **University of Guelph, Guelph — *Web Developer***

July 2020 - Present

In response to the 2020 Covid-19 pandemic, the University of Guelph Zavitz Gallery was tasked to find a way to digitalize their gallery. Building this website, I gained valuable experience working with web development languages, such as PHP and JavaScript, as I built forms for submitting art proposals

### **University of Guelph, Guelph — *Undergraduate Teaching Assistant***

September 2020 - Present

Given my passion for programming and my enjoyment of spreading knowledge, this role was a comfortable fit. As a TA, I can guide students and explain the various concepts. This not only cemented my own understanding, but also proves my capabilities as a Developer. Leading labs, marking assignments, and conducting seminars gave me ample opportunities to constantly refresh my memory on the founding principles of computing, as I explained complex algorithms to students.