

# JONATHAN BORGHESE

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44284 Lord Fairfax Place, Ashburn, VA 20147

Virginia Tech Computer Engineering Graduate with a focus in AI/Machine Learning

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## EDUCATION

**Virginia Tech, Bachelor of Science in Computer Engineering**, Summa Cum Laude Honors

**Virginia Tech, Minor in Computer Science**

**Virginia Tech, Masters of Science in Machine Learning**, Pending

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## SKILLS

**AI:** Machine Learning, Deep Learning, Computer Vision, Reinforcement Learning

**JavaScript:** TypeScript, HTML, CSS, NodeJS, AngularJS, React, Angular

**CS:** C, C++, Java, Algorithms, Data Structures, MQTT, SQL, Git, MongoDB

**Linux:** VirtualBox, Kernel Programming

**Python:** Pandas, Scikit Learn, Tensorflow, OpenCV, Keras

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## JOB EXPERIENCE

### Graduate Teaching Assistant

Virginia Tech Spring 2022

- Taught circuit fundamentals and C++ through a microcontroller

Virginia Tech Fall 2022

- Taught Digital Systems, a class about transistor logic and the relationship between hardware and software

### Math & Programming Tutor

- Tutored Algebra I & II, Geometry, Calculus I for high school aged students

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## RELEVANT COURSEWORK

- **Machine Learning** – fundamentals ML techniques
  - Created handwriting recognition software from scratch that has a 93% success rate with the MNIST database
  - Made a house pricing predictor using a random forest regressor using SKlearn
- **Reinforcement Learning** – Reinforcement learning concepts and applications
  - Created a stock trading AI from scratch in python using Q-Learning
- **Computer Vision** – Techniques for automated analysis of images and videos including image formation, feature detection, and segmentation were learned
  - Made motion detection software using the KLT algorithm in python
- **Data Structure & Algorithms** – Created data structures such as hash tables, B+ trees in both Java and C++
- **Cloud Software Design** – Studied front-end and back-end web design using NodeJS and AngularJS
  - Used NodeJS to implement a back-end server capable of login/logout/ functionality and chat messaging

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## PERSONAL PROJECTS

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|---|----------------------------------|
| - Personal Discord Bot with Python ( <a href="#">view</a> ) | - Unreal Engine Voxel Generation |
| - K nearest neighbor algorithm ( <a href="#">view</a> )     | - Unity Platformer Game          |
| - Tetris with ascii characters in cmd using C++             | - Valve Hammer Editor Projects   |