# William Thomas Hahn

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## EDUCATION

**Purdue University, West Lafayette, IN** ***Expected May 2022***
Bachelor of Science in Computer Science

**Carmel High School, Carmel, IN** ***May 2018***
Academic Honors Diploma, Technical Honors Diploma, AP Capstone Diploma ***GPA: 4.17/4.00***

**AP Exams**
5 on: AP Computer Science A, AP Calculus AB, AP Calculus BC, AP Capstone Research

## TECHNICAL SKILLS

**Ranked: 1 (Learning) – 10 (Proficient)**

**Languages:** Java (9), C++ (7), C (6), Bash (6), HTML & CSS (4), GLSL (3)
**Software/Tools:** Eclipse IDE (9), Unix/Linux (7), Git (7), Arduino (7) Visual Studio (6), VIM (5), OpenGL (3), DirectX (3), SFML (3), CUDA (2), OpenCV (2)

## PROJECTS

**Neural Network:** ***AP Capstone Research Project, Independent Study Project*** – C++
- Researched the impact complex training data has on neural network training times and found a positive correlation between complexity and training time
- Implemented training data efficiency comparison
- Integrated a polymorphic program to generate neural networks from a predefined layout file
- Designed and implemented mathematical function generating algorithm

**3D Map Generation:** ***Independent Study Computer Science Project*** – C++
- Rendered map of 3D cubes where the user could move and view the map
- Implemented Voronoi noise to generate the map and used the DirectX API to render on the screen

**Fractal Generation:** ***Personal Project*** – Java
- Generated Mandelbrot and Julia set renderings in 4k
- Implemented in conjunction with "Image Manipulation" to modify the images for more pleasing visuals

**Image Manipulation:** ***Personal Project*** – Java
- Manipulated images through 2D array traversing
- Implemented algorithms to modify contrast, color, and splice images

**STL File Viewer:** ***Personal Project*** – C++
- Displayed STL files for previewing before they would be sent to a slicer for 3D printing
- Implemented OpenGL 3D rendering within the SFML API to generate a wireframe representation of the object

**Screen Recorder:** ***Personal Project*** – Java, C/C++
- Implemented an algorithm which continuously captured screenshots.
- Designed User Interface to preview and modify video
- Integrated OpenCV and Java Native Interface within the project to increase the possible framerate by 87.5%

## RELEVANT COURSEWORK

**Current:** Fundamentals of Computer Science, Programming in C, Multivariate Calculus
**Past:** AP Computer Science A, AP Calculus AB, AP Calculus BC, Computer Programming 1, Introduction to Engineering Design, Principles of Engineering, Digital Electronics

## ACTIVITIES AND VOLUNTEER WORK

| | | |
|---|---|---|
| **Association of Information Technology Professionals** | Member | ***2018 – Present*** |
| **Tutoring** | Math, Chemistry, Computer Science | ***2016-2018*** |
| **Carmel Jazz Band** | Trombone Player | ***2014-2018*** |
| **Carmel Concert Band** | Principle Euphonium | ***2014-2018*** |
| **Carmel Marching Band** | Leadership Team Member | ***2013-2017*** |
| **Lifepointe Church Westfield Mission Trip** | Participant | ***July 2016 & July 2017*** |

## ACCOMPLISHMENTS AND AWARDS

National Honor Society ***May 2017-May 2018***
AP Scholar with Distinction ***2018***
National AP Scholar ***2018***