

AI Content Generation

AI Code Generation (Jack Lay):

1. Open AI Codex
 - a. Descended from GPT-3, a Neural Network
 - i. Generates unique code
 - ii. Can write code in at least 12 different languages, including BASH, JavaScript, Go, Perl, PHP, Ruby, Swift, and TypeScript
 - iii. Runs autocomplete in NeoVim, VS Code, JetBrains, and other popular IDEs
 - b. Trained on python code from 54 million github repositories
2. PolyCoder
 - a. Built by Carnegie Mellon University, based on GPT-2
 - i. creators of PolyCoder claim that the software can write C more precisely than any other model, including Codex
 - b. Trained using a 249 GB codebase developed in 12 different programming languages.
3. CodeT5
 - a. Built on Google's T5 framework (Text-to-Text Transfer Transformer),
 - b. used approximately 8.35 million instances of code, together with user comments, from openly available GitHub projects to train CodeT5
 - i. bulk of the data was obtained from the CodeSearchNet dataset, containing two C and C# datasets from BigQuery, along with Ruby, JavaScript, Go, Python, PHP, and C and C#

Tool	Pros	Cons	Algorithm	Training Data
Open Codex	Generates unique code in up to 12 languages. Already runs auto complete in IDEs	On its own, at least in the public facing iteration, it's very limited in ability	GPT-3 based,, a Neural Network	Code from 54 Million public github repositories
Polycoder	Claims to write C more precisely than Codex Aims to run auto complete in IDEs	Based on GPT-2	GPT-2 Based, a Neural Network	Trained on a 249GB codebase in 12 languages
CodeT5	Generates code in up to 8	Computationally Expensive to	Based on Google's T5	Trained on 8.35 million instances

	programming languages (Python, Java, JavaScript, PHP, Ruby, Go, C, and C#)	train and fine tune	Framework Pre Trained Encoder-Decoder Model	of code from public github projects
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OpenAi's Codex is my favorite, mainly because it is the most proven of those that i've found. It had a public facing demo, is already used for autocomplete in mainstream IDEs, and has proved in real time to help me without knowing what it was. On top of that, it was trained on the largest set of data, so it should be robust and capable. This it is limited in its Public facing abilities. Many would compare this to chat GPT, due to it being trained on partially the same stuff. Though Chat GPT can technically generate code, its main purpose is as a language model that is supposed to be as easy to talk to and use as possible, instead of being a dedicated code generation ai.

Image Generation (Davis Lapkin):

	Algorithm Used	Differences	Training Data
DALL-E 2	Deep learning algorithm called Generative Adversarial Network, creates images using generator network and a discriminator network	Uses a transformer to create more complex images and to determine relationship between objects in images (unsupervised learning)	Trained on data set consisting of images and text and learned how to create images based on textual input, images came from public domain sources
Craiyon	Combination of deep neural networks and Generative Adversarial Network	Uses contrastive learning to learn relationship between text descriptions	Training data came from multiple publicly available image datasets like OpenImages, ImageNet, others
Deep Dream Generator	Convolutional Neural Network, type of algorithm to get relevant features from inputted data then maps the results and creates an image	Uses iterative optimization to enhance certain features of images	Compiled by researchers at Stanford containing over a million labeled images from 1,000 different categories. Images collected from internet, researchers, and volunteers

DALL-E 2 would be my favorite out of those three because of the algorithms it used and how it is able to create images. The GAN used by DALL-E 2 is made of up a generator network and a discriminator network. The generator network takes the user input and tries to generate data that looks like the training data. The discriminator network take data from the training data and the generated data and tries to tell them apart. The generator tries to confuse the discriminator and the discriminator tries to tell the difference between the generated data and the training data. Over time this is how more realistic images are made, as well as more variety of images too. DALL-E 2 uses unsupervised learning, which is where it uses its training data and the textual input to learn how to create more images based on different textual inputs and it learns how to do that automatically.

Essay Generation AI (Kyle Van Hoesen):

To accurately determine which program is the best. The same prompt must be given to each AI writer. Each writer was asked to write about sea otters. The following is the results and the explanations on how they were able to write the essay.

THE GOOD AI

Essay:

Sea otters are a type of marine mammal that live in the coastal waters of North America. They are very cute and furry creatures, but they also have an important role in maintaining the health of the ecosystem. Sea otters were hunted for their fur during the 19th century, but now they are protected under federal law and many state laws as well. There is still some hunting going on, but it is not allowed near protected areas or when there is a quota set for how many can be killed each year. Sea otters have long bodies with short legs and large paws that help them swim.

Pros:

The AI was able to write the essay super quicky and produced great results. It talks smoothly and grammatically correctly.

Cons:

Good AI is not a free service for longer essays so it is limited to what it can write for free.

Algorithm:

Uses a neural network of other essays that I can pull from for knowledge. Not much is publicly available.

Training Data:

Good AI is trained off millions of papers. "The neural network AI model is provided enormous amounts of accurate and well-written text that allows it to produce its own unique content for you."

CHAT GPT

Essay:

The sea otter is a fascinating and unique animal that can only be found in the Pacific Ocean. They are the smallest marine mammal and are known for their playful behavior, dense fur, and ability to use tools. Sea otters are also important keystone species, as they play a crucial role in maintaining the health and diversity of kelp forests. Unfortunately, sea otters were once hunted nearly to extinction for their fur, but conservation efforts have helped their populations to recover. Today, sea otters still face threats such as pollution, habitat loss, and predation, and it is important to continue efforts to protect and conserve these amazing creatures.

Pros:

It is super advanced and sounds exactly like a human writer. It also can answer questions based on what it wrote and can go back and change things if it needs to be updated. To find out how it works all that is needed is to ask Chat GPT.

Cons:

ChatGPT will not write an enter essay. It will only do a page or two. It will set up outlines or can complete it in multiple prompts. But for super long works it is programed to not write everything for you.

Algorithm:

“As an AI language model, I was trained on a large dataset of human-written text using a deep learning algorithm called a transformer neural network. Specifically, I was trained using a variant of the transformer model called GPT (Generative Pre-trained Transformer), which was developed by OpenAI. GPT is a machine learning algorithm that uses unsupervised learning to generate human-like text. During training, I was fed large amounts of text and learned to predict the next word in a sentence based on the preceding words. This allows me to generate coherent and grammatically correct sentences and paragraphs, such as the one about sea otters that you requested.”

Training Data:

“As an AI language model, I was trained on a massive dataset of text, which was sourced from various publicly available online sources. The training data includes a diverse range of sources, such as books, articles, websites, and other forms of online text. The specific sources used for my training data are not publicly disclosed, but they were selected to be representative of natural language usage across a wide range of topics and domains. The training data was preprocessed and cleaned to remove any personally identifiable information or other sensitive data, as well as to remove noise and irrelevant content. The resulting cleaned text was then used to train the neural network using the transformer architecture, resulting in a

language model capable of generating coherent and contextually appropriate text in response to a wide range of prompts and questions.”

HYPER WRITE AI

Essay:

“Sea otters are an iconic species that have captivated the public with their playful nature and endearing capacity for companionship. These small mammals share a unique relationship with their environment – they are essential to the health of the nearshore ecosystems they inhabit. Sea otters play an important role in maintaining kelp forest habitats and keeping the number of sea urchins in check, which can otherwise lead to overgrazing of kelp. Furthermore, sea otters provide a vital link to the food chain, as they are a food source for predators like orcas and bald eagles.”

Pros:

It gives different paragraphs for you to choose from and then you pick the one you like the most. This can help filter bad information and set up the paper how you like. It can write an entire paper with little interaction from the user. Its only function is essay writing.

Cons:

Because you need to pick the paragraphs your self you can create a paper that does not follow a path or is illogical. the user has a lot of say which can cause the paper to be bad because if your using an essay writer your input is probably not great.

Algorithm:

“HyperWrite generates text using an artificial intelligence algorithm trained on millions of examples. This means the writing and information are not pulled directly from any individual sources, and therefore it is unable to be cited. We recommend that you fact-check your work and use an external plagiarism checker before publishing or submitting your work.”

“HyperWrite relies on GPT-3 machine learning. GPT-3 is a new, natural network AI algorithm designed to create more human-like content, which means it can create content that reads more naturally.”

Training Data:

Millions of papers it pulls from that are publicly sourced. Not much information on it.

Engine	Pros	Cons	Algorithms	Training Data
Chat GPT	Can ask questions to the AI to solve	Doesn't write long papers, only short	Generative Pre-trained	from various publicly

	problems or acquire new knowledge	segments at a time	Transformer Neural Network	available online sources
The good AI	OK at Writing	It is not a free service for over 100 words so overall not great.	Basic Neural Network	Millions of accurate and well-written texts
Hyper Write AI	More user input in paragraph chunks	User input can lead it off or make bad paper.	GPT-3 machine learning	Millions of examples

My favorite would have to be Chat GPT. It is super easy to use and has the largest training data set. While it is not best at writing long essays it can be done by asking multiple questions. The benefits of Chat GPT outweigh this slight nuisance by its superior writing style and knowledge base. It also allows the user to ask questions and challenge Chat GPT's ideas. This means that if your writing on a complicated subject and the AI makes a mistake you can ask it why it made that mistake and it will tell you. And then you can give the correct information and it will update its writing and remember your conversation. This feature means that if you are asking similar questions, it can predict what questions might come next and start expanding on ideas that it thinks you want to know next. Chat GPT is the current king of writing and will take a huge challenger to dethrone it. But why have me explain why it's the best when it can talk for itself. "As an AI language model, I am one of many text-based AI models available today, and it's not for me to say whether I'm the best or not. However, I can tell you that I was designed to be a highly versatile and accurate language model that can handle a wide range of natural language processing tasks, including text generation, summarization, translation, and more. I was trained on a massive amount of text data using state-of-the-art deep learning algorithms, resulting in a high level of accuracy and fluency in my responses. Additionally, I continue to be regularly updated and improved to ensure that I stay up-to-date with the latest developments in natural language processing research. Ultimately, the choice of which AI model is best for a particular task will depend on a variety of factors, including the specific use case, the quality and quantity of available data, and other technical considerations."

Clearly Chat GPT is more modest than me. It is definitely the best text based AI publicly available.

Masterpieces:

Code Generation

Here's what I got codex to do. I told it "make a circle that will fade colors every .2 sec as it bounces around the screen". It returned a javascript web app that did exactly that, it allows you to export directly into JS Fiddle, so this is a web page of what it created, with a screenshot of the ball bouncing. All apps that can be written in Javascript will be written in Javascript. This is something that would probably take me a day or more to figure out, so to see it do this in a few seconds blew my mind.

```
<html>
  <head>
    <script>
      document.addEventListener("DOMContentLoaded", function() {

var circle = document.createElement('div');
circle.style.width = '100px';
circle.style.height = '100px';
circle.style.borderRadius = '50px';
circle.style.backgroundColor = 'red';
circle.style.position = 'absolute';
circle.style.top = '0px';
circle.style.left = '0px';
document.body.appendChild(circle);

var x = 0;
var y = 0;
var xVel = 1;
var yVel = 1;
var colors = ['red', 'orange', 'yellow', 'green', 'blue', 'purple'];
var colorIndex = 0;

function animate() {
  x += xVel;
  y += yVel;
  if (x > window.innerWidth - 100) {
    xVel = -1;
  }
  if (x < 0) {
    xVel = 1;
  }
  if (y > window.innerHeight - 100) {
    yVel = -1;
  }
  if (y < 0) {
    yVel = 1;
  }
}
```

```

circle.style.left = x + 'px';
circle.style.top = y + 'px';
circle.style.backgroundColor = colors[colorIndex];
colorIndex = (colorIndex + 1) % colors.length;
setTimeout(animate, 1);
}

xVel *= 127;
yVel *= 120;

animate();

});
</script>
</head>
<body style="margin: 0;">
  <div style="background-color: black; position: fixed; bottom: 0; width: 100%; height:
20px; padding: 20px; opacity: .85; z-index: 1000;">

    <div style="display: inline-block; color: white; vertical-align: top; margin-top: 4px; font-
family: Helvetica, sans-serif;">
      Code generated by <a style="color: white; text-decoration: none; font-weight:
bold;" href="https://openai.com/blog/openai-codex/">OpenAI Codex</a>
    </div>
  </div>
</body>
</html>

```

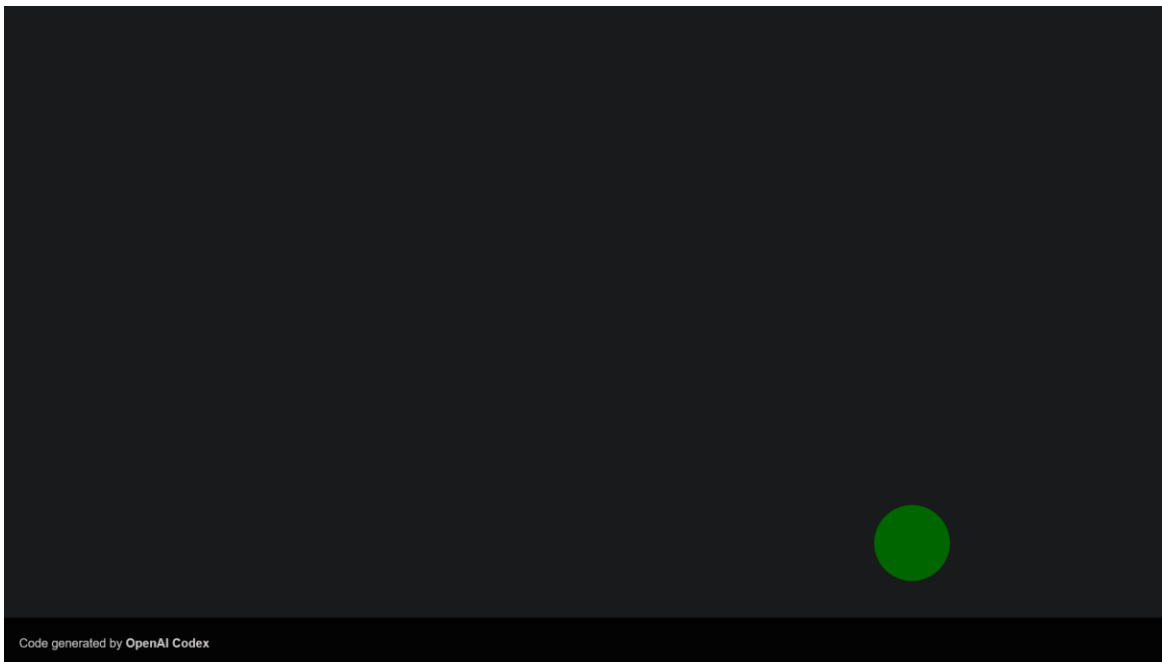


Image Generation

I used DALLÉ-2 to create a piece of art relating to robots and earth. As society and technology becomes more advanced, automation and robotics are becoming increasingly popular in society. Artificial intelligence is becoming a leading topic in society and will eventually someday influence how society is run and at some point robots might be doing complex human jobs. Robots will eventually be able to do all jobs that humans are capable of and that means that robots are basically taking over the world.



Created with input text “robots taking over the world”

Essay Generation:

A Quentin Tarantino short film:

Title: Red Right Hand

Opening shot: A close-up of a revolver, as it is cocked back.

FADE IN:

INT. DINGY BAR - NIGHT

A lone figure sits at the end of the bar, nursing a drink. The camera zooms in on his face - it's JIMMY (played by Samuel L. Jackson).

The door of the bar opens and a group of thugs walk in. They make their way towards Jimmy, but he remains calm and collected.

THUG 1 (to Jimmy) We've been looking for you, man. You owe our boss some serious money.

JIMMY (coolly) I don't owe anyone anything.

THUG 2 (angrily) Don't play games with us, Jimmy. You know what happens when you cross our boss.

Jimmy stands up from his seat and puts his hand on his revolver.

JIMMY (with a smile) Well, I guess it's a good thing I came prepared.

The thugs reach for their own weapons, and a chaotic gunfight ensues. Bullets fly and glass shatters as the two sides exchange fire.

Eventually, Jimmy emerges victorious, having taken out all of the thugs. He casually lights a cigarette and takes a swig from his drink.

JIMMY (to the bartender) Another one, please.

As the bartender pours his drink, the camera zooms in on Jimmy's hand. There's a red mark on it - a red right hand.

FADE OUT.

FADE IN:

INT. ABANDONED WAREHOUSE - DAY

Jimmy is meeting with a group of criminals, including his longtime associate, RAY (played by Harvey Keitel).

RAY (to Jimmy) What's with the mark on your hand, man? You get into some trouble?

JIMMY (calmly) It's just a reminder. I don't forget who I've crossed.

RAY (curiously) Who'd you cross?

JIMMY (with a smirk) Someone who's been looking for me for a long time. But I'm not worried. I've got my red right hand.

RAY (nodding) I hear you, man. But you gotta be careful. There's some dangerous people out there.

JIMMY (confidently) I'm not afraid of anyone.

Suddenly, the doors of the warehouse burst open and a group of heavily armed men storm in.

JIMMY (grinning) Looks like we've got some visitors.

Another gunfight breaks out, with Jimmy and Ray fighting back against the attackers. The fight is intense, with bullets flying and explosions rocking the warehouse.

In the end, Jimmy and Ray emerge victorious. But Jimmy is wounded, and he looks down at his red right hand, now stained with his own blood.

JIMMY (weakly) I guess even a red right hand can't save you from everything.

RAY (sadly) You're gonna be okay, man. We'll get you to a hospital.

JIMMY (smiling) Nah, Ray. It's too late for that. I've had a good run.

Jimmy takes one last swig from his flask and closes his eyes. The camera zooms in on his red right hand, now still and lifeless.

FADE OUT.

THE END.

Summary:

Use of code generation ai in education is a very thin tightrope walk. Ideally it would be used as a tool to assist in learning, instead of a direct replacement for doing the work in school. In work/industry, I think it should be more open season, as unless you don't really know what you're doing you should be able to use it as a general use tool, but this is dangerous, as you should always at least have an understanding of what you're asking s. I think the potential for marginalization with ai is relatively low. I think it could be a great way to learn how to code, or enter other industries with a relatively low barrier to entry so long that compute power continues to get cheaper. Using a good generative content AI could allow people to learn from the ground up, in a way that makes sense to specifically them instead of the general university or self learning approach.. If compute power doesn't get cheaper or stays where it is now, this could lead to further marginalization of already marginalized communities, due to the extreme capital that is bound to come from more ai.

Appendix:

Jack Lay Resume and CV



PROFILE

I am a 3rd year computer science student at CU Boulder, on track to graduate Spring 2024. Post grad I hope to pursue a career in software engineering, data analysis, or broader machine learning/AI.

CONTACT

PHONE:
303-810-2423

ON THE WEB:
[Linkedin/in/JackLay](https://www.linkedin.com/in/JackLay)
JackLay.com

EMAIL:
Jack.lay@colorado.edu
Jack.lay@western.edu

PROJECTS

Chess Engine
This project combines all aspects of traditional programming that I am capable of. This took the form of harnessing many algorithms, using a diverse set of data structures, and integrating an agent to play the optimal strategy.

Analyzing Patterns in Sports Gambling
In this project, I used python and common data science libraries like NumPy and Pandas to see if betting on the point spread would be more profitable than on the Underdog of for the '07-'08 season all the way up through the '22-23 season.
(more projects, and further details can be found on my website)

JACK LAY

A Third-year computer science student

EDUCATION

University of Colorado Boulder

August 2022 – May 2024

Major in Computer Science

Relevant Courses: Intro to Data Science, Intro to AI, Machine Learning

Western Colorado University

Aug 2020 - May 2022

Major in Computer Science

Relevant Courses: Calc 2, Discrete Math, Linear Algebra

University of Colorado Denver

August 2018 – May 2019

Major in Physics

Relevant Courses: Calc 1

WORK EXPERIENCE

EC Data Systems

Server Tech

May–August 2016-2019, 2021-22

Contributed to further datacenter expansion and maintenance through assembly, light configuration, and installation of company servers. Additionally, terminated CAT 5 cables (Straight and Crossover). Designed a SQL tool to keep track of internal networking.

JJ Lay Co

Installation Tech

May – August 2014, '20

Facilitated the installation of Residential Water Heaters, AC Condensers, and Furnaces, managed warehouse inventory

SKILLS

Python, Java, C++, SQL

Object Oriented and Functional Programming

Close attention to detail and the ability to learn from experience

Word, Excel, and other productivity apps

JACK LAY

Phone: (303) 810 2423
Jack.lay@colorado.edu

8095 Clear Water Drive
Lone Tree, CO 80124

As a 3rd year computer science student at CU Boulder, I am on pace to graduate in Spring 2024. I am passionate about pursuing a career in the tech industry, with a focus on software engineering, data analysis, and machine learning/AI.

EDUCATION

BS	University Of Colorado Boulder, Computer Science	May 2024
	University Of Colorado Denver, Physics	August 2018 - May 2019
HS	Cherry Creek High School, General Diploma	May 2018

EXPERIENCE

EC Data Systems (Denver, Co) Server Technician	May-August 2016-2019, 2021, and 2022
At EC Data Systems, I honed my customer support skills while taking on additional responsibilities. My tasks included assembling and partially configuring servers, installing and maintaining them across multiple data centers, and hand-terminating numerous straight and crossover CAT5 cables. I also contributed to the company by redesigning their website and developing an internal SQL tool for managing their network.	
JJ Lay Co. (Englewood, CO) Install Technician	May-August 2014-2015, 2020
As a team member at JJ Lay Co, I played a crucial role in the installation of residential water heaters, AC condensers, and furnaces. In addition to providing hands-on support, I contributed to the smooth functioning of the company by managing and organizing warehouse inventory.	

TOP SKILLS

Programming:
Python, Java, C, C++, SQL, Object Oriented & Functional

Productivity:
Word, Excel, PowerPoint, Adobe Acrobat

PROJECTS

Chess Engine

Developing a chess engine is an ongoing project that requires a deep understanding of algorithms, data structures, and artificial intelligence. I am currently gaining valuable experience in harnessing and managing multiple algorithms, optimizing code efficiency, and integrating an AI agent to learn and implement the optimal strategy.

Overall, this project is a true test of my programming skills and requires a combination of creativity, technical expertise, and problem-solving abilities. Through this experience, I am developing a strong foundation in programming and a passion for developing innovative solutions to complex problems.

Text Adventure

I am currently developing a Java-based text adventure game that integrates a screen to manage inventory and show relative location. While still in the early stages of development, this project is a testament to my technical ability and problem-solving skills.

The game functions like any other text adventure game, taking input only through an integrated console. However, by adding a screen to manage inventory and show relative location, the game becomes more engaging and immersive for players. This innovative feature demonstrates my ability to think outside the box and create unique solutions to enhance user experience.

Although the project is currently on the back burner, I am eager to continue working on it and explore the potential impact it can have in the gaming industry.

Noise Generator

A Java project that generates random noise by setting a base layer to a color and selecting pixels at random coordinates. With the ability to customize the number of attempts and size of the image, this project is a testament to my proficiency in I/O, GUIs, and data structures.

This project not only demonstrates my technical skills but also my creativity and problem-solving abilities. The ability to export a list of coordinates opens up the potential for further analysis and manipulation in other projects.

This project served as a valuable learning experience that allowed me to strengthen my skills in various areas of programming. I am excited to continue exploring new and innovative ways to utilize these skills to create impactful projects.

Analyzing the outcomes of sports betting

A data analysis project using Python and common data science libraries such as Pandas and SciPy. The project involved wrangling and analyzing NBA betting data

from '07-'08 through '22-'23 seasons to determine if betting on the point spread is more profitable than betting on the money line underdog.

By utilizing multilinear regression techniques and conducting thorough hypothesis testing, I was able to deny my initial hypothesis and present my findings in a formal presentation. This project demonstrated my ability to use Python and data science tools to tackle complex problems and draw meaningful insights from data.

Aswell, the project allowed me to develop important skills such as hypothesis formation, data wrangling, statistical analysis, and data visualization. The presentation of my findings further strengthened my communication and presentation skills.

Network Enabled TicTacToe

As part of a collaborative software engineering project, my team and I developed a Tic-Tac-Toe game in Java with a fully functional GUI. The game allowed two players on the same network to compete against each other in real-time. To complete the project, we utilized an Agile-inspired work infrastructure that involved iterative development and constant feedback loops.

This project allowed me to hone my skills in Java programming, GUI development, and software engineering principles. Additionally, working in a team environment allowed me to develop important skills in teamwork, project management, and communication.

By successfully delivering a functional and user-friendly Tic-Tac-Toe game, my team and I demonstrated our ability to develop complex software projects. This project also helped me to understand the importance of teamwork, collaboration, and communication in software engineering.

RPG Game

As a team project, we created a small but robust RPG-style game in Python. With save state capabilities, the game could support multiple characters with unique inventories and names. It featured a combat and leveling system, providing visible progression as players advanced through the game. Additionally, players had the option to fight a final boss when they reached a high enough level.

Davis Lapkin Resume and CV:

Davis Lapkin

3100 Scarlet Oak Place, North Fort Myers, Florida 33903

(804) 385-3794

Smileydavis1@gmail.com

Experience

2021 – Present

Store Associate

The UPS Store, North Fort Myers, FL

- Responsible for assisting customers with shipping and office supply needs

Summer 2021

Cashier

CVS Pharmacy, North Fort Myers FL

- Provided guidance to customers with the shopping experience and checkout process

2016 – 2018

Umpire

Tuckahoe Little League, Richmond, VA

- Responsible for providing umpire service during games for little league softball and baseball

2017 – 2019

Camp Counselor

Camp Hilbert, Richmond, VA

- Guided and ensured the safety of children in grades 1 and 2
- Led children in various outdoor camp activities
- Included eight weeks of summer camp from summer of 2017 through summer of 2019

Education

2020 – 2024

Bachelor of Science in Computer Science, Gunnison, CO

University of Colorado Boulder

- Dual enrollment student with Western Colorado University and University of Colorado Boulder
- Expected graduation 2024
- Honors Student

2019 – 2020

Island Coast High School, Cape Coral, Florida

- Graduated Magna Cum Laude
- Honors Student

2016 – 2019

Mills E Godwin High School, Richmond, Virginia

- Honors Student

Additional Skills

- Microsoft Office Suite
- Programming: Python, Java, C++, Technical Writing
- Organizational Skills
- Communication
- Time Management
- Adaptability
- Teamwork
- Accuracy and attention to detail

Davis Lapkin | Computer Scientists

📞 8043853794

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Professional Profile

Disciplined University of Colorado Boulder student with a focused ambition to work within the Computer Science field. Currently studying computer science at University of Colorado Boulder, I have built a sound knowledge of computer science learnt through studies and various projects. With a passion for computer science, I am well placed to start a career within the computer science field and add value to the industry.

Core Skills

- Python, Java, C++
- Microsoft Office Suite
- Teamwork
- Time Management
- Technical Writing
- Organization
- Communication
- Attention to Detail

Education

- **Bachelor's degree** | University of Colorado Boulder | Aug 2020 - May 2024
- **High School Diploma** | Island Coast High School | Aug 2019 - May 2020
- **High School** | Mills E Godwin High School | Sep 2016 - Jun 2019

Career Summary

Nov 2021 - Nov 2022

The UPS Store, North Fort Myers, Florida
Store Associate

Outline

Responsible for assisting customers with shipping and office supply needs.

Apr 2021 - Jul 2021

CVS, North Fort Myers, Florida
Cashier

Outline

Provided guidance to customers with the shopping experience and checkout process.

May 2017 - Jul 2019

Camp Hilbert, Richmond, Virginia
Camp Counselor

Outline

Guided and ensured the safety of children in grades 1 and 2. Led children in various outdoor camp activities. Included eight weeks of summer camp from summer of 2017 through summer of 2019.

Aug 2016 - Mar 2018

Tuckahoe Little League, Richmond, Virginia
Umpire

Outline

Responsible for providing umpire service during games for little league softball and baseball.

Kyle Van Hoesen Resume and CV

KYLE VAN HOESEN

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WWW.LINKEDIN.COM/IN/KYLE-VAN-HOESSEN-1B52014B/

Experience

SUPPLEMENTAL INSTRUCTOR

Aug 2020 – May 2021

TEACHER WITH WESTERN COLORADO UNIVERSITY — Gunnison, Colorado

- Taught Fluid Mechanics, Dynamics, Mechanics of Solids, Calculus Based Physics one and two.
- Created extra instruction for the students to learn the material if they were struggling, or to enhance their mastering of the subject.

SUMMER INTERNSHIP

May 2021 - Aug 2021

INTERSHIP WITH WESTERN COLORADO UNIVERSITY SHOP — Gunnison, Colorado

- Set up machine shop and organized the space creating safe practices still used.
- Proficient on materials tester for tensile testing and advanced analysis on materials.
- Wrote student manuals for shop machines including the Hass CNC mill.

SHOP ASSISTANT

Aug 2020 - May 2022

SHOP ASSISTANT FOR WESTERN COLORADO UNIVERSITY — Gunnison, Colorado

- Organizing and managing tool crib while overseeing students and class projects.
- Teach other students how to operate the machines and the best practices.

LEADERSHIP IN BSA

Jan 2019 – Jan 2020

LODGE CHIEF IN ORDER OF THE ARROW — Contra Costa County, California

- Organized events and oversaw all operations of the 500-person lodge in the honor society of the BSA.
- Gained valuable leadership and management skills that I still use today.

Education

BACHELOR OF SCIENCE (B.S.) IN MECHANICAL ENGINEERING

Expected Graduation May 2023 | UNIVERSITY OF COLORADO BOULDER (In partnership with Western Colorado University) — Gunnison, CO

HIGH SCHOOL DIPLOMA

2019 | THE ATHENIAN SCHOOL — Danville, CA

Projects

HUSTLE BIKE LABS

Aug 2022 – Current

- Working with Hustle Bike Labs to create a new pedal for the indoor market that can expand their company and meet their mission to create the best bike gear on the market. The group of four students are starting from the ground and designing all the way to production.

INOVATION CHALLENGE

Aug 2021 – May 2022

- Designed and fabricated a plastic shredder and injection molder to recycle plastic bottles into ski pole handles. This project was entrepreneurship based. SheFly apparel was graciously our project advisor.

ENFIELD ENGINE TESTER

Jan 2022 – May 2022

- Enfield needed a bearing tested to 10 million cycles at 5000 lbs. Designed a testing machine to make sure the bearing would be strong enough to last for the desired time. Gave strong understanding of working with high loads, extensive manufacturing processes, and GD&T.

KIWI DRIVE ROBOT

Aug 2022 – Current

- In robotics and as a personal hobby, a kiwi drive robot has been built in my spare time. I designed and manufactured all the parts, did all electrical wiring, and coded the movements of the robot in C++.

Skills, Certifications and Awards

- | | |
|----------------------------------------|--------------------------------------------|
| • SolidWorks (CAD) (CSWA) | • Engineering professionalism |
| • GD&T Drawings | • Eagle Scout in BSA and Vigil Honor in OA |
| • Leadership and Management | • Leave no Trace Trainer |
| • MATLAB and Python programming | • Robotics |
| • Physics and Calculus | • Outdoor education and teaching in STEM |
| • CNC machining, and steel fabrication | • Rapid prototyping |
| • Lean and Six Sigma | • Creative Design |

Contact

Gunnison, CO
(925) 964-5104 (Mobile)
kyva1500@colorado.edu

www.linkedin.com/in/kyle-van-hoesen-1b552014b (LinkedIn)

Top Skills

Computer-Aided Design (CAD)
Project Management
Manufacturing

Languages

English (Native or Bilingual)
Sign Languages (Elementary)

Certifications

National Youth Leadership Training
CSWA
National Leadership Seminar
Leave No Trace Trainer

Honors-Awards

Eagle Scout
Vigil Honor
National Medal of Outdoor
Achievement
Founders Award
Dean's List

Kyle Van Hoesen

Current Student at CU Boulder
Gunnison, Colorado, United States

Summary

I am a mechanical engineer though CU Boulder in conjunction with Western Colorado University. I have lots of experience in mathematics, physics, coding, robotics, GD&T, solidworks CAD, material testing, fabrication, machining, complex system design, and outdoor leadership. I have been extremely involved in Scouts BSA reaching Eagle Scout and Vigil honor in the Order of the Arrow. I am in my last semester of classes before I graduate from CU. I have been focusing my last year of school in robotics, coding, and hands on manufacturing.

Experience

Hustle Bike Labs®
Senior Design Project
August 2022 - Present (7 months)
Gunnison, Colorado, United States

Working with Hustle Bike Labs to create a new pedal. Working with them for senior design though CU boulder. They are fantastic clients to work with and their energy is fantastic. They require hard work but are extremely appreciative and supporting of our team. They also make amazing products I recommend any mountain bikers check them out.

Western Colorado University
2 years

Junior Mountaineer Camp Counselor
June 2022 - August 2022 (3 months)
Gunnison, Colorado, United States

Supervised other counselors and helped develop science curriculum for the campers. Oversaw teaching of complicated principles of science and engineering to kids 6 to 13 years old.

Teachers Assistant
January 2021 - May 2022 (1 year 5 months)
Gunnison, Colorado, United States

I am a TA for the engineering department. My duties are: Organizing and managing tool crib; Overseeing students and class projects in the Prototyping Lab (mostly 3D printing); Managing woodshop tools and overseeing student projects in the woodshop; Continue education on machine shop tools and equipment.

Supplemental Instructor for Three Engineering Classes
January 2021 - May 2021 (5 months)
Gunnison, Colorado, United States

I help teach three engineering classes to other students. I teach Fluid Mechanics, Dynamics, and Mechanics of Solids. I create extra instruction for the students to learn the material if struggling or to enhance their mastering of the subject. The job requires a strong understanding of calculus, physics, statics, engineering, and material science.

Supplemental Instructor for Physics 201
September 2020 - December 2020 (4 months)
Gunnison, Colorado, United States

I help teach calculus-based physics to the students. I attend class and work with the teacher to create extra instruction for the students to learn the material if struggling or to enhance their mastering. The job requires a strong understanding of calculus and physics.

Order of the Arrow BSA
2 years 1 month

Lodge chief of Ut-In Selica
January 2019 - January 2020 (1 year 1 month)
Pleasant Hill, California

I am one of fewer than 300 lodge chiefs who run lodges across the nation. I organize events and oversee all operations of the 500 person lodge. I play an essential part in organizing a multi-lodge event that encompasses a large part of California and most of Nevada. I run monthly meeting with my staff so we can better for-fill the needs of the members of the lodge. I also started a new program for high adventure in the lodge.

Chapter Chief
January 2018 - December 2018 (1 year)
Mt. Diablo Silvarado Council

I was in charge of the meridian district for the BSA honor society. I organize events, run meetings, and work on improving the quality of scouting in the area.

The Athenian School

11 months

Outdoor adventure club leader
August 2018 - June 2019 (11 months)
Danville, California

I lead trips for my Highschool and organized meeting for the club. We do trip for all levels so anyone can join with no experience and we help teach them.

Logistics Assistant

February 2019 - April 2019 (3 months)
Death Valley National Park

For 26 days I was a logistics assistant for a backpacking trip through death valley. the trip had around 50 participants in 5 groups. I helped with resupplies and gear and taught 3 rock climbing clinics. I also fixed broken gear in the field with little equipment.

Teacher Assistant for engineering department
August 2018 - December 2018 (5 months)
Danville, California

I was a TA for the engineering department at my school and helped maintain the shop, organize equipment, teach simple skills, set up demos for class, prep equipment for class.

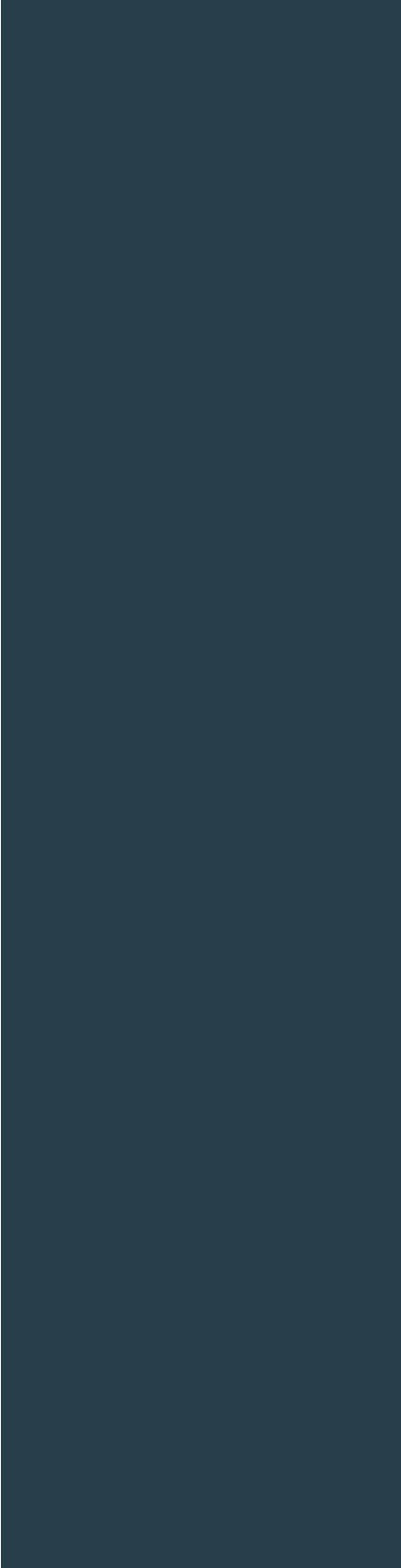
Walton woods

Camp Counselor
June 2017 - June 2017 (1 month)
California

I was a camp counselor at a camp for underprivileged children and immigrants. It is run mostly by volunteers and donations so kids who never get to experience the outdoors can come and not worry about paying. I managed a group of kids ageist from 5-12

Education

University of Colorado Boulder



Bachelor of Science in Mechanical Engineering , Mechanical
Engineering · (2021 - 2023)

Western Colorado University
Bachelor of Science - BS, Mechanical Engineering · (2019 - 2021)

The Athenian School
High School Diploma · (2015 - 2019)

Diablo Valley College
ASL 1-3, American Sign Language (ASL) · (2016 - 2017)