

# NATHAN SCHNEIDER

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## EDUCATION

**Dartmouth College**, Hanover, NH

**June 2022**

*Bachelor of Arts, Major in Computer Science, Minor in Engineering Sciences*

**GPA 3.80**

**Relevant Coursework:** Machine Learning, AI, Reinforcement Learning, Robotics

**Major GPA 3.88**

**Honors/Awards:** Citation for Meritorious Performance in Introductory CS, OOP, Machine Learning

**Activities:** Dartmouth Climbing Team Leader, Dartmouth Mountaineering Club

## SKILLS

Programming Languages: Python, Bash, JavaScript/Typescript, Go, C, Java, Arduino

AWS / Cloud Computing: AWS CDK, Lambda, Cloudwatch, Cloudformation, API-Gateway, S3, DynamoDB

Web Development: React.js, Node.js, Redux.js, Ruby on Rails, SQL, MongoDB, Heroku, Netlify, Insomnia

Machine Learning/Computer Vision: Tensorflow, OpenAI Gym, Jupyter Notebook, PiCamera, OpenCV

Data Science: R, RStudio, Tidyverse, NumPy, Pandas, Pyplot

Productivity: Git, Slack, Github, Zoom, Microsoft Office, Google Drive, Zenhub

Other: Strong communication skills, Diverse mathematics background, Interdisciplinary team experience

## WORK EXPERIENCE

**Amazon Web Services**, Seattle, WA

**August 2022 - Present**

*Software Development Engineer I, AWS IoT Device Ecosystem*

- Using AWS CDK, designed and deployed native AWS canary services to monitor the health of our product
- Collaborated with a team to design high level solutions with well-written, highly organized documentation
- Officially recognized by team for outstanding work in over 45% of sprint retrospectives

**Amazon Web Services**, Seattle, WA

**May 2021 - September 2021**

*Software Development Engineer Intern, AWS IoT Device Ecosystem*

- Designed and implemented a cloud based hardware mutex for collaboration and automation in software testing
- Through investigation and research, diagnosed and defined team productivity losses
- Using AWS CDK Infrastructure as Code, provisioned and tuned cloud services for reliability and security
- Wrote high quality Python, Go, and Typescript code, chosen for varying needs of the project

**Computer Science Department at Dartmouth College**, Hanover, NH

**December 2020 - Present**

*Data Science Research Assistant, Full-time*

- Aggregated, summarized, and anonymized 20 years of campus Wi-Fi usage data for research distribution
- Independently developed research questions, programmed targeted scripts, and created powerful visualizations
- Utilized Bash scripting tools, Python, and Ctypes, to quickly parse and transform massive datasets
- Researched, implemented, and tested solutions in a remote environment to protect sensitive data

**DALI Lab**, Hanover, NH

**December 2019 - January 2020**

*Full-Stack Software Engineer*

- Engaged in 18+ hour work weeks on DALI Lab projects while maintaining full course load
- Collaborated with an interdisciplinary Agile team to design, develop, and deploy multiple projects
  - Project Pine Beetle - a web platform to visualize and predict outbreaks of Southern Pine Beetle
  - GoPhish - an education tool to teach users to identify and prevent phishing attacks
  - SLAR - Sign Language Augmented Reality game to teach finger spelling
  - Vox Daily - Modernization of campus email news system

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## Laboratory for Atmospheric and Space Physics, Boulder, CO

June 2019 - September 2019

### Data Science Intern

- Using Python and LabVIEW, designed and implemented a database analysis tool for accelerator functionality
- Provided curated graphics and metrics for novel insights on both live and historical data
- Iteratively improved user interface and capabilities based on projected user needs

## Dartmouth College, Hanover, NH

March 2019 - Present

### Tutor, Computer Science

- Worked with individual students to understand and extend computer science concepts
- Analyzed and targeted weaknesses in student understanding to teach tutees more efficiently

## Cognitive Science Department at Dartmouth College, Hanover, NH

March - May 2019, November 2020

### Full Stack Software Engineer

- Using Node.js, jsPsych, MySQL, developed and deployed a secure web platform for psychological surveys
- Implemented configurable architecture, so non-coder researchers are able to edit study-specific parameters

## PROJECT EXPERIENCE

### MANI: Gesture Controlled Virtual Assistant

November 2022 - June 2022

- Led a team of peers develop a gesture-based virtual assistant, utilizing computer vision and machine learning
- Integrated Mediapipe Hands for feature analysis to scikit-learn time-series models for gesture classification
- Optimized pose tracking computer vision models using Google Coral tensor processing units (TPUs)
- Deployed software and motorized robotic peripherals on Raspberry Pi computers

### Reinforcement Learning with a Robotic Manipulator

November 2021

- Created a custom OpenAI Gym environment for a reinforcement learning task: Sliding puck manipulation
- Trained and evaluated Proximal Policy Optimization (PPO) models in a custom simulation for the task
- Implemented the environment in the real world, using an ABB IRB 120 Robotic Manipulator Arm and PiCamera

### Computer Vision Raspberry Pi Projects

Dec 2020 – July 2021

- With Python, OpenCV, Tensorflow implemented several Computer Vision Projects on Raspberry Pi's
- Utilized GPIO, TPU, and PiCamera peripherals to process the environment and control robotic components
  - Squirrel Cam - Surveilled bird feeders to identify and spray unwanted squirrels with water
  - Robot Follower - Small wheeled robot designed to follow the wearer of an Aruco fiducial marker
  - Facial Recognition Doorbell - Identified visitors by their faces to play a unique audio greeting

### Portfolio Website

Nov 2020 – Present

- Designed and developed a personal portfolio website to aid in my job search
- Created a novel generative Q/A page utilizing OpenAI's GPT-3 API beta with my personal information
- Implemented SMS alerts for visitors, with IP geolocation to inform me of a visitor's company/location

### Moonboard™ Difficulty Classification Neural Networks

September 2019

- Retrieved and cleaned community climbing route data from Moonboard™
- Trained and tested deep neural networks to predict climbing route difficulty
- Experimented with data weights to avoid erroneous classifications due to overrepresented data