

# Spencer Bruce

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## Education and Honors

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**Columbia University** – The Fu Foundation School of Engineering and Applied Sciences

April 2021

B.S. in Computer Science: Vision, Graphics, Interaction, and Robotics Track, Minor in Sociology

*Relevant Courses:* Artificial Intelligence, Computer Graphics, Deep Learning for Computer Vision, Natural Language Processing, Robotics

*Academic Achievements:* Cum Laude (3.92), Tau Beta Pi Engineering Honor Society, Dean's List

*Extracurriculars:* EcoReps, Sci-Inspire, MakerSpace + Design Center, Transfer Student Coalition, Running Club

## Technical Skills

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*Languages:* Python, JavaScript (React, jQuery, d3), Java (OpenGL), C/C++, Scala, Processing, HTML, CSS

*Tools & Technologies:* Adobe CC Suite, Final Cut Pro X, Figma, Tableau, Git, LaTeX, MATLAB, CAD, 3D printing, laser cutting, sewing

## Experience

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**Head Teaching Assistant** – Introduction to Programming in Python; Columbia University

January 2019 - April 2021

- Recipient of Andrew P. Kosoresow Memorial Award for Excellence in Teaching, performed exceptionally in student reviews
- Developed new class structure, assignments, and exams, focusing on alternating lecture and collaborative workshops for 200+ students
- Managed team of 8-12 teaching assistants to ensure uniform standards in instruction and grading
- Managed Bash and Python scripts for grading, seating arrangements, and course organization/logistics

**Teaching Assistant** – Advanced Programming in C/C++; Columbia University

January 2020 - April 2020

- Instructed Computer Science students on systems programming in review sessions and office hours
- Worked with 15 other TAs to manage remote Linux server hosting student assignments, exams, and grading scripts
- Organized hackathon for 300+ students and alumni, including sponsorship search, merchandise purchasing, and website maintenance

**Web Design Intern** – SUNY Center for Professional Development; Syracuse

May 2019 - August 2019

- Spearheaded design and implementation of CPD website using d4 CMS in preparation for SUNY Online product release
- Managed website production and maintenance for 50+ educational and instructional workshops
- Created branding and promotional material for SUNY CPD and its affiliates, including 64 college campuses throughout New York

**Staff Designer** – Columbia Daily Spectator

September 2018 - May 2019

- Designed, edited, and produced data visualizations for articles and long form pieces for print and web
- Trained in industry-standard D3, Tableau, and Adobe InDesign

## Projects

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**TikTok and Spotify Trend Data Visualization**

- Aggregated data from TikTok audio trends using BeautifulSoup web scraping and Spotify API
- Designed, programmed, and iterated on an interactive dashboard that visualizes trends using D3.js and Observable

**Interactive COVID-19 Demographics Dashboard**

- Curated custom dataset from various governmental and COVID-19 regulatory sources using numpy
- Visualized data in interactive parallel coordinate dashboard using D3.js and Observable

**Polanding Twitter Bot**

- Collected, annotated, and cleaned custom dataset of photos with red-white boundaries
- Trained TensorFlow Object Detection API + Google's MobileNet architecture on COCO + custom datasets
- Deployed Twitter bot using Raspberry Pi and Tweepy API that responded to tweets with comedic videos that go "Polanding"

**Creative Embedded Systems**

- Prototyped various creative technological projects using ESP-32, Raspberry Pi, and MakerSpace tools and equipment
- Repurposed "trash" and electrical components in low-waste artistic expression, e.g. making an LED billboard COVID face mask

**Quadruped Robot**

- Designed spherical quadruped robot using SolidWorks following class size and component constraints
- Constructed and programmed robot using Raspberry Pi, additive manufacturing, and various machining techniques
- Performed gait optimization using PyBullet to simulate movement in a virtual playground

## Interests and Other Activities

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Sustainability, graphic design, tennis, hiking, distance running, crafting, sweets, Thai food, Rubik's cubes, reading, video games

*CliftonStrengths:* Achiever, Woo, Positivity, Communication, Input