Spencer Bruce

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Education and Honors

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 (Python), Computer Graphics (Java), Deep Learning for Computer Vision (Python), Data Visualization (JS), Natural Language Processing (Python), Advanced Programming (C/C++), Data Structures and Algorithms (Java, Scala), User Interface Design (JS), Fundamentals of Computer Systems (Assembly)

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

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, CAD, Blender, 3D printing, laser cutting, sewing

Experience

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
- Introduced 200+ students to computing fundamentals including object-oriented programming, sorting algorithms, and data structures
- Authored Python assignments/exams and built new hybrid course structure, alternating between lecture and collaborative workshops
- Managed team of 8-12 teaching assistants to ensure uniform standards in instruction and grading
- Developed Bash and Python script infrastructure to streamline grading, seating arrangements, and course organization/logistics

Teaching Assistant *– Advanced Programming in C/C++; Columbia University* ***January 2020 - April 2020***

- Introduced 300+ students to systems programming topics including process control, TCP/IP networking, and memory management
- Maintained remote Linux server which hosts student assignments, exams, and grading scripts with 15 other teaching assistants
- Organized hackathon for students and alumni, including website maintenance, sponsorship search, and merchandise purchasing
- Overhauled course instruction during transition to remote learning, including recording and dissemination of digital instruction material

Web Design Intern *– SUNY Center for Professional Development; Syracuse* ***May 2019 - August 2019***

- Spearheaded UI 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***

- Performed statistical analysis and preliminary charting of hand-curated datasets using NumPy, Pandas, and Matplotlib
- Designed, edited, and produced data visualizations for print and web articles using D3.js, Tableau, and Adobe Creative Suite

Projects

TikTok and Spotify Trend Data Visualization (Link)

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

Interactive COVID-19 Demographics Dashboard (Link)

- 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 (Link)

- 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"

Quadruped Robot (Link)

- 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

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

CliftonStrengths: Achiever, Woo, Positivity, Communication, Input