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Brent Lee

I'm a high school senior. Wait! Bear with me for the next 30 seconds.

I am interested in all things tech, or more specifically, in designing and building hardware and software. This passion drives me to experiment and delve into projects. For a few highlights, please take a look at my **machine learning** and **embedded system** projects on the next page.

I'm currently dual enrolled in both the International Baccalaureate (IB) and Valencia Technology (Val-Tech) program at Valencia High School (VHS). I chose to dual enroll to take advantage of both the academic rigor the IB program offers and the freedom the Val-Tech program provides to pursue my technological interests.

I am an active member of the E-Sports, **Cybersecurity**, and **Robotics** clubs at Valencia. I am the president of the VHS E-Sports Club, vice president of the Cybersecurity club, and programming lead of the Robotics team. I am passionate about Computer Science and Engineering. I really enjoy **dreaming up cool stuff** and **making designing them into reality**; it turns out that many projects like that involve CS.

I mainly code in **Python**. Python has the largest and most useful libraries for projects I get involved with. This is true for **machine learning** (**ML**) and **artificial intelligence (AI);** this is also true for **cyber security** projects such as automating computer security during CyberPatriot competitions. In particular, Python within **Jupyter Notebook** is phenomenal. The combination lets me try ideas quickly. This is especially true for the ML and **machine vision** undertakings.

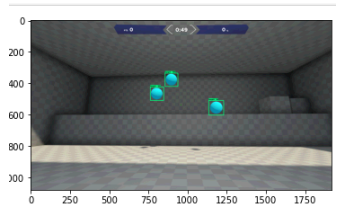
I game on a Windows PC for compatibility purposes, but the projects are done on a dual boot Windows/**Ubuntu Linux** workstation. Previously, I ran projects on an old Dell Xeon workstation bought from Ebay. Due to the lack of a GPU, training an ML model was horrendously slow. Fortunately, because of the recent price crash, I was able to buy a new NVIDIA graphics card. I'm looking forward to the boost in processing power that it provides. So far, I've used it to do some research into training batch size's effect on model training for IB Extended Essay research paper.

I have experience with **JavaScript** and **Java** as well. Java fluency is required for the CS advance placement (AP) class and IB CS curriculum, so it is unavoidable. I am also gaining experience in **C++** through another one of my computer science classes. I've also used **Vue.js** and **Azure web services** in the process of developing a collaborative radio entry logbook single page web application for a school project.

I also have some experience with **CAD** software and 3D modeling. I learned quite a decent amount about **SolidWorks** from being on my school's robotics team and the mechatronics courses at my school. Knowing how to design parts was extremely useful when designing my mechanical keyboard and a Bluetooth adapter for my HiFi wired headphones.

I have done some embedded system design. This was for my keyboard project: from **schematic capture and PCB layout** with KiCad, through firmware in **C for an Arduino SBC**, to integration and test with the host PC. I'm typing this now on the keyboard I built. Oh, in case you're wondering, a gaming keyboard is nothing compared to a high refresh rate monitor. You really can see the difference.

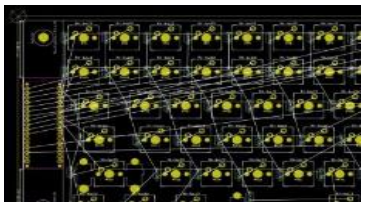
AimBot



Using computer vision and machine learning to make an accurate and extremely fast aiming robot.

Detail and source:
https://github.com/overlordpro-sys/cv2-aimbot

Gaming Keyboard

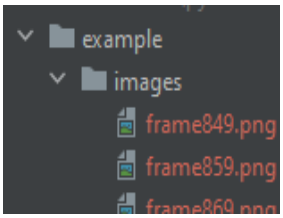


From concept, through design to manufacture my ideal mechanical keyboard.

YouTube:
https://youtu.be/BKlyYG0T2mQ

Detail and source:
https://github.com/overlordpro-sys/keycool84keyboard

AutoAnnotate



Python script to speed up the process of ML data annotation. Using a pretrained object detection model, the script automatically generates xml files with the inferred bounding boxes for further model training.

Detail and source:
https://github.com/overlordpro-sys/tfod-auto-annotate

Link to Brent's website: projects, code, and video

Brent Lee

Education

Valencia High School
- 4.73 Weighted, 4.0 Un-weighted GPA
- International Baccalaureate (IB) and ValTech Diploma (technology focused) student
- IB courses in Math (Calculus), Computer Science, and Physics

Extra Curriculars and Clubs

Valencia Cyber Security Club
- Club Vice President
- Consistent semi-finalist and platinum rank in CyberPatriot annual competition
- SoCal Cyber Cup cybersecurity competition finalist team

Valencia E-Sports Club
- Club President
- Planned and ran a successful tournament for club members

Robotics Team 4470
- Programming & Robot Vision Lead
- Contributed to the building and programming of a robot with an articulated arm for the First Robotics Competition 2023 & Los Angeles Regional

Science Olympiad
- Member of the 2023 Science Olympiad team

Co-Founder of Coding For Future Non-Profit Organization
- Founding goal: provide resources, teaching, and tutoring to low-income/disadvantaged students for free
- Project manager and website designer

Service, Volunteering, and Work Experience

Internship at Parsec Automation Corp
- Developed prototypes using JavaScript and GPT AI for SQL queries
- Integrated Azure's text recognition, enhanced TrakSYS with C#
- Designed web pages for editing and insights, optimized database use

Speech and Debate for Kids Non-profit Organization
- Re-designed and refined organization’s website
- Worked with WordPress, HTML, CSS

Valencia High School
- Tutor for NHS Tiger Tutoring and volunteer at showcase night for robotics team

East Lake Village Community Association
- Managed food and attraction booths
- Summer and Winter family events

Awards and Merits

- Val-Tech Diploma and IB Diploma Candidate
- Valencia High Distinguished Scholar 2020-2023 (3.8+ cumulative GPA)
- Valencia High Honor Roll 2020-2023
- AP Scholar with Honor
- National Honor Society (NHS) Member
- California Scholarship Federation Membership
- UCLA Valorant Westwood Showdown Tournament 2022 Team MVP
- Medallist for Wi-Fi Lab in 2023 BirdSO Science Olympiad Invitational
- Medallist for Bridge in 2023 Science Olympiad Regional Finals at UC Irvine

Skills

- Proficient in Python and Java
- Knowledgeable about HTML, CSS, JavaScript, C#, Vue, and Bootstrap
- Versed in 3D CAD and PCB design
- Experience with computer vision and machine learning
- Leadership and communication
- Comfortable working in a team environment