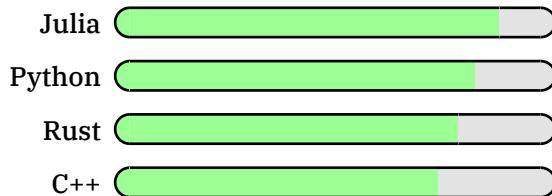




Alistair Keiller

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Robotics, Data Science, and Theoretical Physics.

EDUCATION

Stanford University: Summer Session Student.

Summer of 2023 Stanford, California

University of California San Diego: Extension Student.

2023-2023 San Diego, California

University of California Santa Cruz: Extension Student.

Summer of 2022 Santa Cruz, California

Stanford Online High School: High School Student.

2020-Present San Diego, California

EXPERIENCE

Stanford Online High School's First Robotics Team. Founder, Captain, Lead Programmer 2021-Present

C++, Julia, Fusion 360 | Teamwork, Group Projects.

For the 3-month season (January 8th - early April), I carve my classes and activities to allow me to put in 60+ hour weeks of design, fab, and programming. I love the tight-knit community within our robotics team, and I love solving the problems that arise in FRC. Although I spend the majority of my time in technical roles, my favorite and the most critical part is organizing the team to run at maximum efficiency, especially given our unique position as a hybrid / online robotics team. Outside of the three-month season, I still spend a significant amount of time organizing and preparing for the next season with fundraising, exploring new forms of programming, and testing new designs.

Emeritus.org. Summer Intern Summer of 2021

Ruby On Rails | Full Stack Engineer on a 25 person international software engineering team.

I worked on the backend and front end of the customer purchasing interface. I created a full demo web interface, showcasing some new concepts, and helped resolve issues with the main interface. Personally, this experience was my introduction to an industry leading DevOps process, including a complex Github workflow and integration between GitHub, Task Management Systems, and CI Workflow runs.

AlwaysAI. Summer Intern Summer of 2020

Python | Embedded Computer Vision Demo Projects.

I created demo applications using Intel's Realsense cameras to automatically find the distance between objects in real-time on an embedded device and show applications of this software, like detecting social distancing in public places.

HONORS AND AWARDS

- First Robotics Judges' Award, Aerospace Valley Regional 2023
- Completed Highest Level of Google's Software Engineering Assessment, Google Foobar 2022
- First Robotics Judges' Award, Aerospace Valley Regional 2022
- First Robotics Judges' Award, San Diego Regional 2022
- USACO Silver 2020
- Gold Medal, World Math Team Competition 2019

SAMPLE OF OVERCOMING A CHALLENGE

My teammates and I arrived at Del Mar Fairgrounds, ready to compete in the FIRST Robotics Competition (FRC). Unfortunately, as we entered the building, we were told the competition was canceled. It was

March 2020. For the next year, the robot sat under a tarp and collected dust. FRC remained inactive throughout the pandemic. Eventually, my team disbanded.

I really enjoyed my time in FRC and wanted to return as the competitions resumed. However, by then, I was a student at Stanford Online High School, which did not have a team. So, I founded Pixelators. Unfortunately, others did not share my enthusiasm: zero people showed up to the first meetings. After weeks of recruiting, I had one of the largest clubs at OHS, motivated and ready to compete. Our mentors, Mark and Robby, taught us how to make a robot and helped us learn to work together as a hybrid team, possibly the only one of its kind. Many of our members are remote: two members even live in Italy and Thailand. We learned to test our code in simulation and to use CNC machines to save in-person fabrication time. At both competitions we attended, we were recognized for our challenging work and unique status as a hybrid team, which earned us two judges' awards.

I feel like I have made a positive impact on the team by bringing everyone together. But, sometimes, I feel like I need to be more focused on my leadership responsibilities, like recruiting, marketing, and fundraising. Instead, I tend to get lost in technical roles like fabrication, design, and programming. As the new season approaches, I have worked tirelessly on recruiting and fundraising. We are a much more mature and prepared team than we were last season, and we are ready for another.

i MY PASSIONS

In my C++ programming class, I open Replit, the website we are supposed to use for collaboration. Key words: supposed to. I cross my fingers, hoping that it works... It doesn't. I sigh and open Google Docs instead. We don't finish the assignment because Google Docs isn't designed for code collaboration. I know there has to be a better way.

Frustrated that Replit's servers were constantly overloaded, I started working on a collaborative browser-based editor that runs locally on the user's machine, decreasing the load on the servers. My instructor has used working versions of my editor in his classes, and I'm still improving the user experience. I don't want other students to struggle with Replit like I did. Now, I'm working with LLVM's developers to improve the performance of my editor.

I'm also working on modeling bee dynamics, which I started in HiMCM, a team mathematical modeling competition. I was amazed by the details that an existing model, Beesteward, was able to capture: it simulates badgers, mites, and even the bees' genes. However, this model was written in NetLogo, an old niche programming language, with very little documentation and terrible performance – a single simulation can take several hours! So, I rewrote the model in Julia, which makes it much easier to read, easier to document, and faster to run. This allows for more possibilities, like running an optimization algorithm, so bee farmers can find the optimal placement of their bees. I had so much fun making the model during the competition that I'm still working on it; I've also reached out to the author of the original model.

I'm captivated by this type of programming/problem-solving that helps others. It motivates me to intern with AlwaysAI and Emeritus and work on projects like Google Foobar, USACO, and Berkeley's Calico.

i FIVE TRAITS

- Teflon - In the first year of the founding of the robotics club, Tesla, one of our members, enjoyed intensely teasing and making fun of me, mostly because I handled it well and had a good sense of humor about it. That became an inside joke in the club, and now there is a group of people with the role "Bane Of Alistair's Existence" in our discord server that all love "torturing" me. As a result our mentor described my response as "Teflon." In FRC there is a lot to learn and a lot of mistakes that will be made in the process, and this culture has been the core of our growth as a team as we persevere.
- Passionate - Since my fifth birthday at rolling robot, after any conversation about a niche computer science tool that I enjoy using or an open source project that I am contributing to, friends describe the sheer excitement and dedication to experimenting with, learning, and helping these projects as passionate about computer science.
- Curious - Between extended naval history conversations with our robotics mentor (going from dinner well past 1 AM) and learning about the unexpected intricacies of numerous sports from friends, I love being surrounded by other passionate people who can answer my many, many questions, in a wide

range of topics. I have always been driven to learn how the world works. Learning how it works at physical and fundamental level has sparked my interest in becoming well rounded in STEM, while learning about it at a larger philosophical level has fueled my interest in the OHS core courses and seeking out information from people and resources that are willing to share, and have new and different perspectives from me.

- Empathetic - I have always been observant and a good listener; trying to make sure that everyone feels heard and included.
- Kind - I like to spend time helping other people, both officially as a TA and peer tutor at OHS, and unofficially like at Stanford Summer Session where I can often be found in the computer study room helping others to better understand various math, computer science, and electrical engineering topics. I like to spend time with family both to hang out with close family and also help out our grandparents as they have started to need some support.

i FEEDBACK FROM FRIENDS

My friends describe me as passionate, inquisitive, lighthearted, a hard worker, dependable, innovative, and a leader. One description that I get the most is patient:

“Another thing I appreciate about Alistair is his patience. Our team constantly takes on new members who need to be trained in CAD, programming, and fabrication. Training new members can be an extremely challenging and time consuming task especially when dealing with the complicated software and equipment that we use in robotics. Personally, I often lacked the necessary patience to guide new members through processes and would find myself completing the lion’s share of tasks in projects that were meant to be collaborative efforts. Alistair, however, follows a distinctly different approach. He consistently demonstrates a willingness to invest however much time is needed in teaching various software to new members and helping explain diverse concepts. I hold a deep admiration for this particular trait of Alistair’s, as more often than not, I am the recipient of his explanations. Around Alistair, I always feel safe to ask whatever questions that pop into my head, because I know Alistair won’t demean me for not knowing the answer; contrarily, he provides thorough explanations to the best of his knowledge, and ensures that by the end of the conversation I am well-informed, and have a clear understanding of the subject matter.”