

## **Moshi Turner**

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## **Industry Experience**

### **Software Engineer**

**May 2023-**

Valve Software (contracted through Arcturus Industries)

- Coordinated US, Spanish, and Chinese teams on topics such as controller tracking, factory calibration, hand tracking, manufacturing materials selection, cost & time optimization.
- Key contributor for an automated 6dof robot station that calibrates the cameras, IMU and display extrinsics for Steam Frame. I was the responsible engineer sent to China for three EVT builds - I added necessary functionality, integrated our software with factory floor database software, wrote error messages and documentation for the ~500 different issues that our station can catch, and trained coworkers on how to use and work on the station.
- Key contributor on ringless controller tracking for Steam Frame controllers, utilizing palm tracking and machine-learning based inertial prediction. Pioneered completely new ML techniques with no academically published prior art.
- Helped with Gaussian Splatting prototypes for Steam Frame.
- Worked on hand tracking prototypes for Steam Frame.
- Designed, simulated and coordinated with Valve's mechanical engineering team on the infrared LED constellation layout for Steam Frame controllers.
- Ran countless experiments to qualify IMUs, volume diffusers, resins and camera placement for Steam Frame and its controllers.
- Brought real experience using VR headsets as a gamer to team discussions to help prioritize product features and motivate engineers to build the right things.

### **Associate Software Engineer**

**May 2021-April 2023**

Collabora

- Worked on Monado, the open-source OpenXR runtime on topics such as hand tracking, SLAM, hardware drivers and the VR compositor.
- Wrote Monado's optical hand tracking, learning computer vision fundamentals, machine learning, artificial dataset generation, real dataset collection, statistics and C++ from scratch over a very short timespan.
- Helped write Monado's SLAM infrastructure.
- Wrote and improved many hardware drivers.
- Contributed to OpenComposite, libsurvive, StereoKit and many other FOSS projects along the way.
- Mentored a Google Summer of Code student.
- Wrote blog posts and Twitter posts promoting Monado and Monado's hand tracking.
- Regarded as "the demo god" (their words not mine) for constantly producing live and recorded demos that showed off various pieces of Monado, including our SLAM and hand tracking.

## **FOSS Hacker**

**March 2020-May 2021**

### **Project North Star**

- Wrote most of Monado's North Star driver, on top of some minimal initial work from Nova King.
- Wrote Monado's "ultraeap\_v2" driver from scratch.
- Helped get StereoKit working on Linux.
- Built many hardware prototypes, iterating on a custom Project North Star headset about 40 times.
- Wrote several display calibration methods for the North Star headset's displays.
- Did some initial work building+evaluating various open-source SLAM implementations.

## **Education**

### **AAS in Mathematics**

**May 2018-Dec 2021**

#### **Austin Community College**

- 3.7 GPA
- Started at age 15, graduated at age 17.

## **Skills/Values**

- Expert level skill in C/C++ and Python. High skill in Rust, decent at C# and web development, and I can pattern-match most other programming languages.
- Lots and lots of experience in cross-cultural communication. I've worked with international teams for my entire career and am very good at catching misunderstandings before they turn into real problems and helping people who initially don't understand each other build good working relationships.
- Strong background in calculus, linear algebra, statistics, machine learning, data science, and low-latency machine vision.
- Pretty good at searching for, reading and understanding ML and pose estimation papers.
- Intermediate proficiency in Mandarin. Basic proficiency in Hindi, Portuguese, German, French, Spanish.
- Hard worker and quick learner
- Systems thinker; obsessed with going up and down levels of abstraction.
- 13 years (since I was 9!) of experience using Blender and its Python API for 3D art, and about three years of using it for ML synthetic data generation.
- A decade of Linux experience. The first time I installed Linux was when I was 11, and the first time I built the Linux kernel myself was when I was maybe 12-13.
- I care about results! I want to ship products that help make peoples' lives better. Nothing's above or below me in achieving that end.

## **Conference Presentations**

- "Introducing Monado's Hand Tracking," FOSS XR, speaker and organizer. Minneapolis, MN., October 2022.

## References

**Mateo De Mayo**, Associate Software Engineer  
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\* I have only worked informally on FOSS projects with this person.