Hal9 helps **Limber Health** provide remote therapeutic care

- **An AI-powered motion tracking system that evaluates users' exercises and tests was developed**
- **Video is processed on the users' devices, protecting their data and privacy**
- **Limber Health submitted for FDA approval one of the functional tests developed with Hal9**

"We thoroughly enjoyed collaborating with Hal9 as our trusted AI partner, from initial design to successful FDA approval"
Chief Medical Officer @ Limber Health

Customer

Limber Health, based in Washington, DC, gathers doctors in sports medicine & physical therapy focused on empowering Physicians and Physical Therapists to augment in-clinic patient care with at-home support through digital technology, aiming to help with the recovery from musculoskeletal conditions (MSK).

Limber recognized barriers to a successful physical therapy episode included access to care, high costs, engaging in progressive home exercise programs, and not enough time to take off from work being some of the challenges with patients completing therapy. Utilizing a hybrid-care model that augments in-person medical care with at-home technology improves upon some of the difficulties patients have with adherence to therapy.

Challenge

After years of collaborating with healthcare providers, Limber envisioned the development of digital tools that harness the technology State-of-the-Art to complement in-person MSK care.

The challenge was then defined as providing augmented care experiences with clinical grade quality that could complement an expert assessment in a care facility or assist

patients at home. All of this had to be achieved using regular mobile devices, not any special or expensive equipment, and protecting users' privacy and data as much as possible.

Solution

Hal9's team of data scientists and engineers used Hal9 to develop a runtime with image recognition and pose estimation models to track the patients motion in a 3D space using the video input from webcams and smartphone's cameras, allowing it to assess patient's functional tests (ranging from equilibrium to motion capacity) and to provide feedback during therapeutic exercises (counting repetitions and validating positions).

This development leverages Limber's extensive library of videos of tests and exercises used to feed the AI module that evaluates the patient's performance.

The runtime was implemented into a browser and mobile apps that process the camera feed locally, protecting the users' privacy and just sending performance data to the server without images or video.

In order to complete this project, Hal9's team collaborated closely with Limber's team of physical therapy experts. Together, both teams established a process to document, test, and validate hundreds of different exercises and functional tests into the runtime.

Results

Limber is now in the process of obtaining FDA approval for one of the functional tests developed in this project in Hal9. They plan to launch new AI-powered features for their iOS and Android apps, becoming one of the companies leading the digital health space.

In addition to measuring quantitative outcomes of patient-reported outcome measures, Limber provides an engaging treatment plan that allows individuals to take ownership of their rehabilitation. By providing qualitative feedback and opportunities for patient support, individuals working through Limber are more likely to complete their prescribed treatment and achieve the necessary rehabilitation for their personal goals.

About Hal9

Hal9's mission is to make "Artificial Intelligence Accessible to Everyone", as we believe AI desperately needs to become more accessible for people worldwide to benefit from this new technology. We have a skilled team of engineers, data scientists, and designers

working on this effort. Hal9 partnered with the Allen Institute for Artificial Intelligence incubator in 2022.