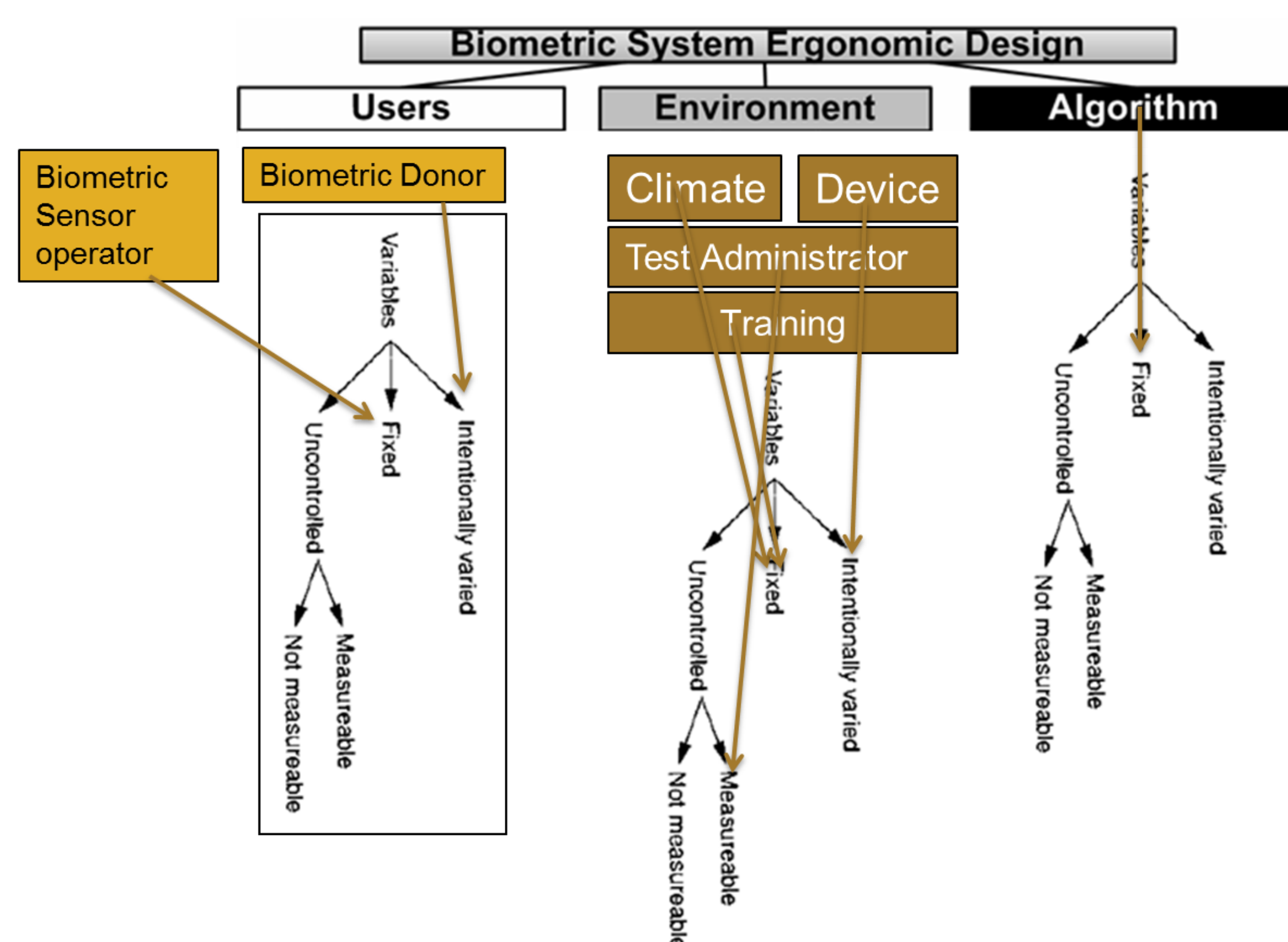
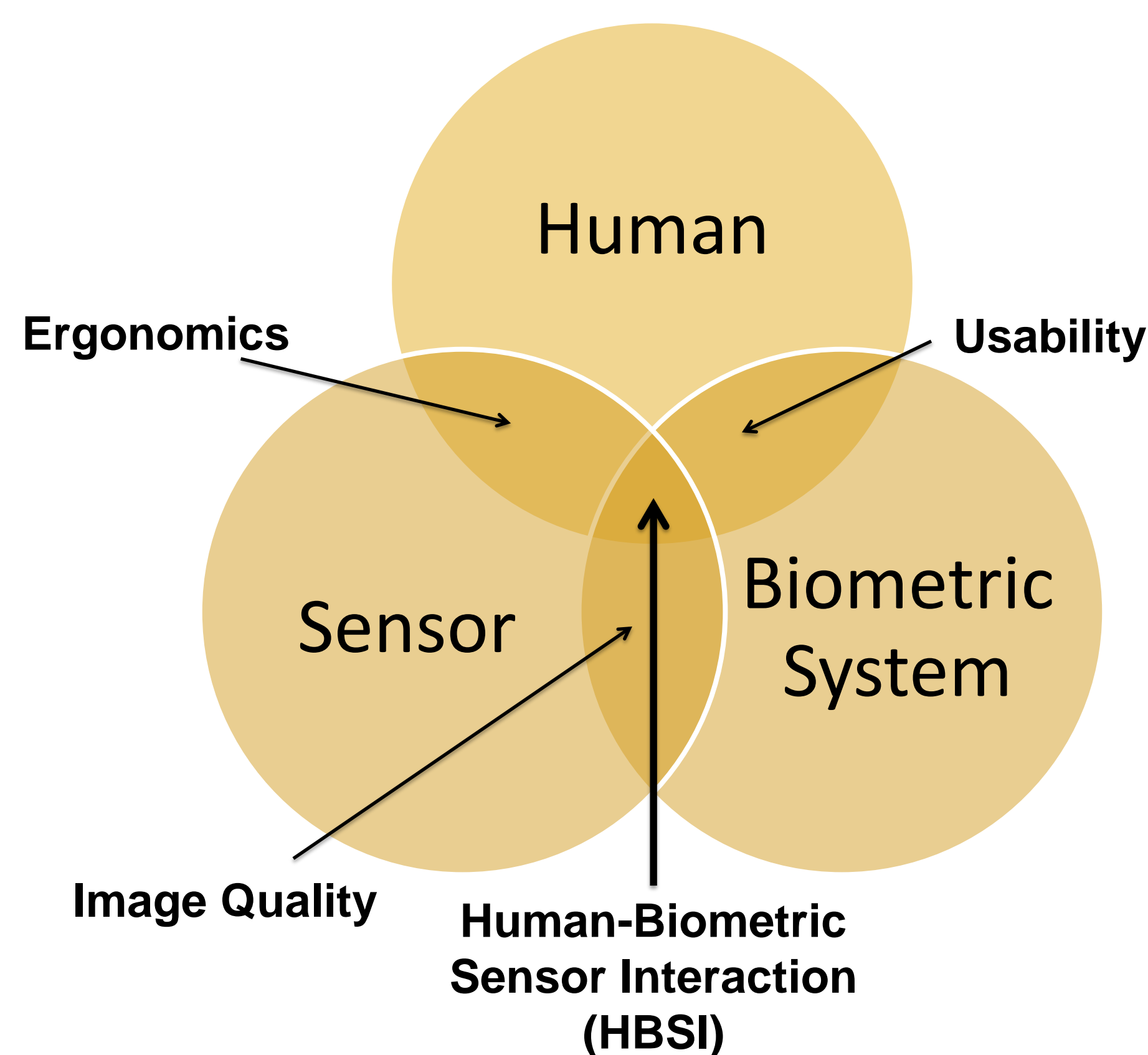


Challenges in Biometric Usability

Michael Brockly, Thomas Cimino, Chris Clouser, Stephen Elliott,
Jacob Hasselgren, Rob Larsen, Kevin O' Connor, Tyler Veegh

Overview

The purpose of this research is to explore the current challenges of the biometric community. With the use of biometric technologies increasing rapidly, it is important to develop potential solutions to these issues across a variety of modalities. From the analysis of earlier Human-Biometric Sensor Interaction models, the students in the lab have identified many areas for potential improvements which include the device, operator, and user.



Habituation

Habituation is not well understood, due to many different definitions. This research is focusing on writing a centralized definition of habituation that can be applied to all modalities and also standardizing the process of habituation. The main challenge that can be solved is time vs. cost. Imagine a kiosk in a high-flow environment. One user does not remember how to use the device and holds the line for an extended period of time. This time delay is costing money which could be avoided with better habituation of devices. This in turn reduces the amount of time in subject (user) throughput. This will also help in usability as well as biometric sample quality.

Current Challenges in Biometrics

- Accessibility of devices
- Subject throughput
- Time vs. cost
- Biometric sample quality
- Reduction of error
- Usability
- Large scale enrollment

Finger Alignment

One project the lab has been working on deals with fingerprint alignment with the 10-Print fingerprint scanner. The proposed solution is to implement a barrier system to the platen of the device in order to improve image quality, usability, and subject throughput times. This project also helps to address the reduction of error by providing a more consistent presentation method across subjects. By reducing time for enrollment, and yielding a better image quality, it will have a bigger impact on large scale enrollment.

Collecting All Fingerprints At Once

Another project deals with scanning all of a user's fingerprints at the same time. This solution addresses an increase in throughput of subjects as the primary goal, with the reduction of error by providing a more consistent presentation method across subjects as a secondary concern. This design will be found useful in situations where larger groups of people are being processed. The design also potentially improves user ergonomics and overall image quality.

Hand Geometry Ergonomic Improvements

Ergonomic improvements to a hand geometry device can reduce several user challenges during interaction. By increasing comfort, the accessibility and usability of the device will reach a broader range of potential users. Improvements will lead to greater subject throughput because users will have a less difficult time interacting correctly with the device. A better subject interaction experience will increase the likelihood for future use.

Test Administrator Error

One particular category in the Biometric System Ergonomic Design model that has been ignored is the test administrator. Previously, in HBSI research, all reported interaction errors are classified under the user of the biometric system. In scenarios such as testing conditions, the user can be directly influenced by the test administrator running the experiment. Errors can be caused by a multitude of variables during this interaction and have previously been unreported. Further research aims to give a new classification of errors so that they can be mitigated and test administrators can be rated accordingly.