**Bluetooth Feedback System**

**What are the use cases?**

Teach CPR to allow medical students to practise giving CPR on newborn baby.

**How does baby CPR happen?**

Sources:

https://www.redcross.org/take-a-class/cpr/performing-cpr/child-baby-cpr

https://www.youtube.com/watch?v=avYRvVHAvfM&t=182s

If baby is unresponsive:

Shout - Tap - Shout. Shout to get the baby’s attention. If the baby does not respond, tap the bottom of the baby’s foot and shout again while checking for breathing, life-threatening bleeding or another obvious life-threatening condition. Check for no more than 10 seconds.

Give 30 compressions at the frequency of 100 to 120 BPM. At a force of 1.5 inches, or 1/3 of chest depth. Allow the chest to return to normal position between each compression.

Give 2 breaths, open the airway to a neutral position using the head-tilt/chin-lift technique. Blow for 1 second. Ensure each breath makes the chest rise. Allow the air to exit before giving the next breath.

Repeat until obvious sign of life.

**What feedback will a baby naturally give?**

* Breathing normally
* Breathing abnormally (gasping, choking)
* Not breathing
* Chest filling with breath
* Chest emptying of breath
* Obvious sign of life (crying)

**What feedback will an instructor give?**

During breaths:

* Tilt head further/less
* Tilt chin further/less
* Give breath count more/less
* Give breath longer/shorter
* Appropriate pause between breaths

During compressions:

* Proper positioning of fingers over heart
* Give compressions count more/less
* Faster, slower.
* Harder, softer.
* Appropriate pause between compressions

**What feedback would a system be able to give?**

* Breathing sounds
* Heartbeat sounds
* Crying sounds
* Lung state empty/not empty
* Chest state compressed/uncompressed
* Exact amount of breaths applied in counts
* Exact length of breath applied in seconds
* Exact amount of tilting of head and chin in cm
* Exact amount of compressions applied in counts
* Exact frequency of compressions in BPM
* Exact compression force applied in cm/inch or distance ratio
* Correct positioning of finger over heart yes/no

**How would a system be able to give this feedback?**

* Audio feedback
* Screen feedback
* LED feedback

**What is the best way to give each feedback?**

**What is currently being measured?**

* Air flow
* Compression Force
* Compression Timing

Chest compression test:

Sensor QRE1113