Problem:
- Injury to BP results when contact pressure between baby’s shoulder and mother’s pubic bone exceeds threshold (1-4 of 1000 births)
- BP: Network of nerves from the spinal cord to the shoulder, arm and hand
- Can cause temporary or permanent paralysis
- Researchers do not know how to quantify displacement and loading that leads to injury

Objective: Create firmware that will displace the head of a neonatal piglet and plot graphs showing various displacement, displacement rates and force values that lead to BP Injuries

Solution:
- Design Inputs
  - Test: Displace piglets neck up to 100 mm
  - Test Name: Displacement (0-100 mm)
  - Avg. Error: ≤ 1%
  - Results: PASS
- Test: Control displacement rate of piglets neck
  - Test Name: Displacement Rate (0-10 mm/s)
  - Avg. Error: ≤ 1%
  - Results: PART
- Test: Record a force up to 100 N
  - Test Name: Force Collection (0-100 N)
  - Avg. Error: ≤ 1%
  - Results: FAIL
- Test: Record Data at 52 Hz
  - Test Name: Data Collection (10 sec @ 52 Hz)
  - Avg. Error: ≤ 1%
  - Results: PASS

Future Developments:
- Connect GUI wirelessly with hardware
- Create app compatible with device

Innovation and Societal Impact:
- First Quantitative research tool for brachial plexus injury in piglets
- Information will assist surgeons and improve live birth delivery techniques

Sources