Development of a retrofitted low cost pressure gauge for venous wall monitoring

The Institut für Medizingerätetechnik is investigating devices to improve blood draw efficiency in the clinical setting. Currently, during blood draw or with catheter insertion a patient’s venous walls can collapse, due to the pressure differences, resulting in effective blood draw being no longer possible. As a result, clinicians are required to draw blood at another location, requiring more time and increasing patient discomfort. Therefore, this project is focused on creating passive pressure indicator to indicate to clinicians the pressure at the blood draw extraction site, and indicating if the venous wall has collapsed or not. A low cost retrofitted pressure gauge should be developed to indicate the typical blood pressure ranges. The device will be designed to be integrated into existing blood draw needles and able to disposed of after use. The final prototype will be evaluated by comparison to simple electronic pressure gauge.

The main points to be addressed are:

- Literature search of the range of blood pressure values required to be measured and limitations of device size.
- Concept design and evaluation of retrofitted pressure measurement devices.
- Develop and build a pressure measurement device prototype.
- Evaluate the prototype with an electronic pressure gauge and a fluid filled tube.

Supervision will be provided in English by a native English speaker (From New Zealand). As a result, the thesis should also be written in English.