Masters Dissertation Ideas

- Friction model using different identification techniques.
- Friction model for multilayer soft tissue.
- Koopman theory for system identification.
- Check different succesful models on Podders data (e.g. Khadem).
- Retraction force modelling (initial plummet due to friction)
- Comparison of friction models
  - LuGre model
  - Dahl model
  - Relative velocity model
  - Stribeck model
- Axial forces as function of depth and insertion velocity F = F(x, u) (surface)
- Identification using data from analytical models
- Compare ultrasound deformations with graphics
- Modelling needle forces during insertion into soft tissue: Gives Poisson and modulus for both needle and tissue.

Extensions

- FEM and ML for online control