



## **Medical Imaging – Registration**

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### **Abstract**

Medical imaging comes with a range of challenges related to the high dimensionality of the data, patient-specific anatomy, physiology, growth and pathology, as well as the wealth of imaging modalities involved. In order to fuse complementary image information obtained from different imaging systems, or for longitudinal assessment of disease progression or response to treatment, image registration is becoming an enabling tool for clinicians. This tutorial will cover some of the state-of-the-art in medical image registration, such as complex sliding motion modelling of organs using diffeomorphic logDemons, and modality-independent neighbourhood descriptors for multi-modal deformable registration using a symmetric Gauss-Newton framework. Both approaches will be illustrated for lung imaging as an exemplar application.

*Syllabus: Non-rigid registration, diffeomorphic registration, multi-modality registration*