**Preprocessed Images Si (i = 1, … ,N)**

**Registration Metric**

**Rigid Translation Parameters**

**Cubic B-spline Interpolator**

**Registration Metric**

**Registered Raw Speckle Images**

**Fixed Images S1**

**Moving Images Si (i = 1, … ,N)**

**Raw Speckle Images Ii (i = 1, … ,N)**

**Convolution Kernel**