

	Proposed	Ambiguities	Implementation
Pre-processing	<p>Trim non-breech face impression regions.</p> <p>Remove dropouts &amp; outliers.</p> <p>Apply band-pass Gaussian regression filter.</p>	<p>Trimming performed manually, processed data unavailable.</p> <p>Outliers not defined, “removal” of dropouts is unclear.</p> <p>Unclear how wavelength cut-offs and implicit parameters are chosen.</p>	<p>RANSAC + Hough Transform + crop exterior NA rows/columns isolates BF impression region.*</p> <p>Outliers/dropouts not removed.</p> <p>Gaussian low, high, &amp; band-pass filters with user-set cut-offs.*</p>
Comparison	<p>Rotate one surface matrix by some angle, <math>\theta</math>.</p> <p>Pair disjoint cells in non-rotated surface matrix with non-disjoint regions in rotated matrix.</p> <p>Calculate CCF for each cell/region pair.</p> <p>Identify translation values at which <math>CCF_{\max}</math> occurs for each cell/region pair and <math>\theta</math> value.</p>	<p>Algorithm used to rotate surface matrices not specified.</p> <p>Surface matrices somehow resized to all be of nominal dimension (e.g., 560x560).</p> <p>Unclear how cell/region size ratio is determined.</p> <p>CCF calculation from definition or based on cross-correlation theorem?</p>	<p>Surface matrices rotated via nearest-neighbor interpolation.*</p> <p>Surface matrices are not automatically padded/cropped to nominal dimension.</p> <p>User can set cell/region size ratio.*</p> <p>CC theorem determines translation alignment values, pairwise-complete correlation calculated after alignment.</p>
Top Vote	<p>Calculate consensus-based translation/rotation reference values across all cell/region pairs.</p> <p>Filter translation &amp; rotation values by where the <math>CCF_{\max}</math> value occurs for each cell/region pair.</p> <p>Count cell/region pairs with estimated translation/rotation alignment values within tolerances, <math>\{T_{dx}, T_{dy}, T_{\theta}\}</math>, of reference values and <math>CCF_{\max} \geq T_{CCF}</math>.</p>	<p>Why median for both translation &amp; rotation reference values? Mean or mode feasible alternatives?</p> <p>How are optimal <math>\{T_{dx}, T_{dy}, T_{\theta}, T_{CCF}\}</math> determined other than experimentation?</p>	<p>Reference value function can be set separately for translation &amp; rotation values. Default is median, but the modal rotation value has shown promise.*</p> <p>Thresholds currently decided by experimentation.*</p>
High CMC	<p>Perform comparison procedure in both directions.</p> <p>Build CMC-<math>\theta</math> distributions by counting congruent cell/region pairs for each <math>\theta</math> value.</p> <p>Determine if CMC-<math>\theta</math> distributions attain a mode using High CMC criterion.</p> <p>If CMC-<math>\theta</math> mode is identified, then count CMCs in and around mode - else, defer to Top Vote method CMCs.</p>	<p>What if CMC-<math>\theta</math> mode is wider than one <math>\theta</math> value (i.e., consecutive <math>\theta</math> values tie for the maximum CMC count)?</p> <p>What if a CMC-<math>\theta</math> mode is only identified in one direction?</p>	<p>Median of consecutive tied <math>\theta</math> values used as modal <math>\theta</math> value.</p> <p>Different user-specified options exist to handle cases in which a CMC-<math>\theta</math> is identified in one direction.*</p>