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(54) Title: CLUSTER SEGMENTATION AND CONDITIONAL BASE CALLING

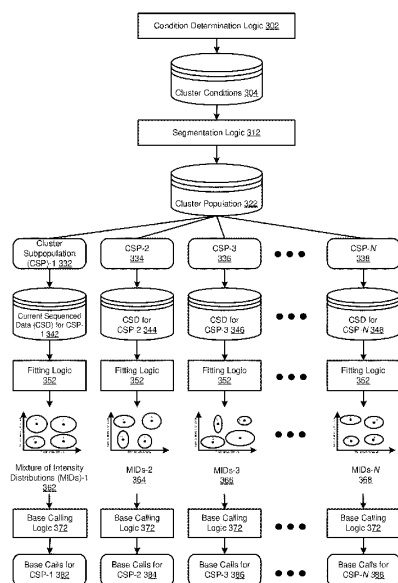


Fig. 3

(57) Abstract: The technology disclosed is directed to cluster segmentation and base calling. The technology disclosed describes a computer-implemented method including segmenting a population of clusters into a plurality of subpopulations of clusters based on one or more prior bases called at one or more prior sequencing cycles of a sequencing run. At a current sequencing cycle of the sequencing run, the method includes applying a mixture of four distributions to current sequenced data of each subpopulation of clusters in the plurality of subpopulations of clusters, the four distributions corresponding to four bases adenine (A), cytosine (C), guanine (G), and thymine (T), and the current sequenced data being generated at the current sequencing cycle. The method further includes base calling clusters in a particular subpopulation of clusters using a corresponding mixture of four distributions.

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