MIT Media Lab Report

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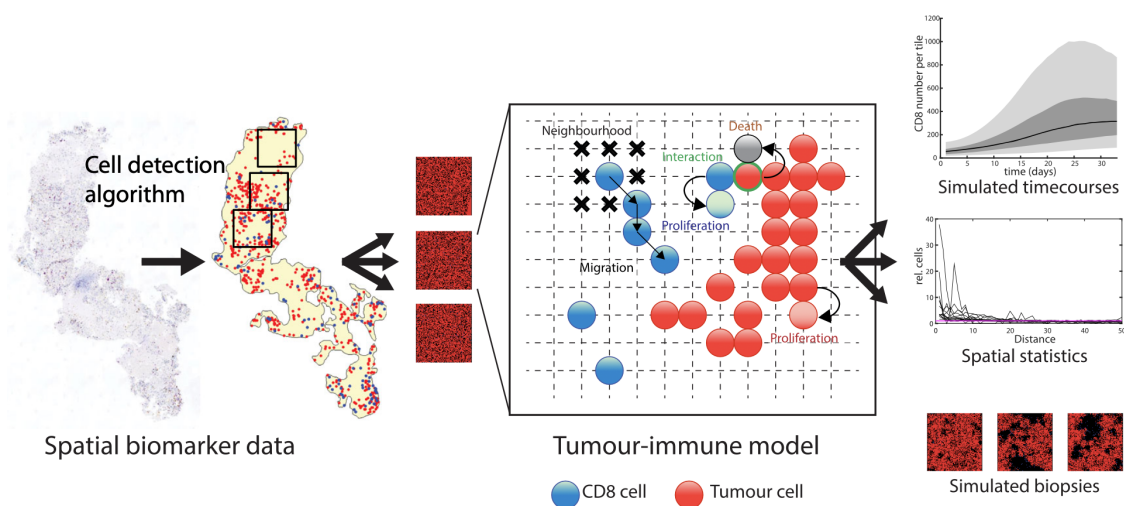

Figure 1: Integrating digital pathology and mathematical modelling.

- Developing methods to calibrate clinical Agent-Based Models(ABMs) directly from biopsies to have a mean accuracy of 77% under the Spatial Agreement Measure(SAM) Metric, minimizing the number of biopsy samples taken.

- Designing a novel multi-modal calibrated ABM pipeline to apply gradient-based ABMs to simulate tumour-immune cell interactions. *(for Cytotoxic CD8+ T Cells in multiple carcinomas and melanoma cases)*

- Extended a novel pip library AgentTorch (Pytorch framework to design, simulate, and optimize agent-based models) for the cancer immunotherapy domain. Extracting the parameters from the classification model with an accuracy of 90%. *(IHC stained tissue sections based on the expression of Ki67)*