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Title:	Regression plane concept for analysing continuous cellular processes with machine learning
Authors:	Banerjee, Indranil (/jspui/browse?type=author&value=Banerjee%2C+Indranil)
Keywords:	Regression plane concept analysing continuous cellular processes
Issue Date:	2021
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Abstract:	Biological processes are inherently continuous, and the chance of phenotypic discovery is significantly restricted by discretising them. Using multi-parametric active regression we introduce the Regression Plane (RP), a user-friendly discovery tool enabling class-free phenotypic supervised machine learning, to describe and explore biological data in a continuous manner. First, we compare traditional classification with regression in a simulated experimental setup. Second, we use our framework to identify genes involved in regulating triglyceride levels in human cells. Subsequently, we analyse a time-lapse dataset on mitosis to demonstrate that the proposed methodology is capable of modelling complex processes at infinite resolution. Finally, we show that hemocyte differentiation in Drosophila melanogaster has continuous characteristics.
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