RÉPUBLIQUE FRANÇAISE
Liberté Égalité Fraternité

INRAE

BovMovie2Pred

SCIENTIFIC NETWORK

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Early categorisation of bovine embryos to boost IVF success

Coordination
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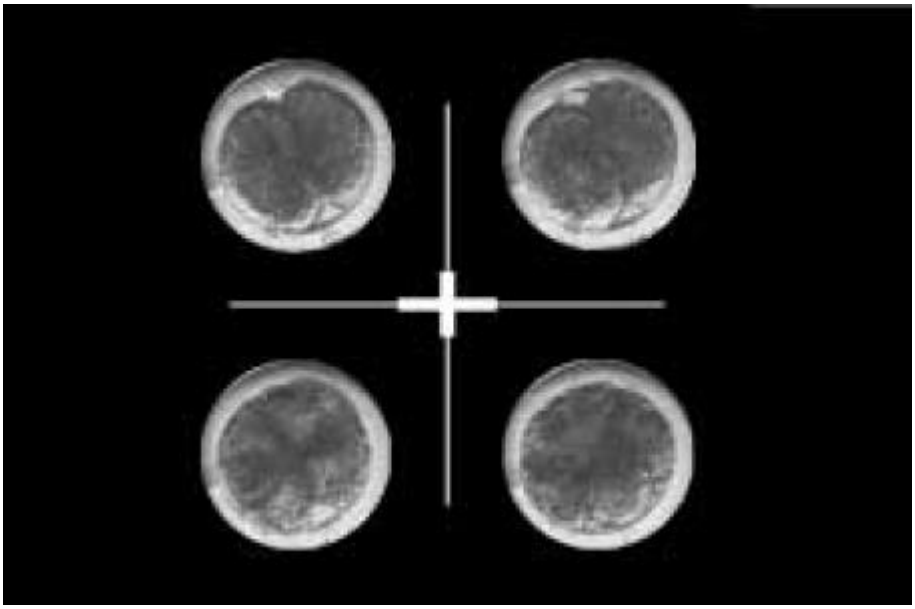
Key words
Deep learning
Statistical learning
Video
Developmental biology
In vitro fertilisation

INRAE units involved
MaIAGE
MIA Paris Saclay
BREED

Partnerships
Inria

Context and challenges

A major issue in in vitro fertilisation (IVF) is the selection of the "best" embryo, i.e. the one most likely to implant in the uterus. Currently, in cattle, the success rate of IVF and embryo transfer does not exceed 30% of viable births. The selection of embryos (from oocytes collected in vivo or post mortem and then fertilised) is based on a classification at D7 after fertilisation. One of the keys to increasing IVF performance is to optimise this selection as early as possible.



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Goals

The objective of the BovMovie2Pred consortium is to propose solutions to assist in the selection of bovine embryos in order to significantly increase the percentage of viable births from in vitro produced embryos.

The aim is to optimise the selection of embryos as early as possible by exploiting their morphokinetic history, from fertilisation to the day of transfer. This history is traced from annotated videos. However, expert annotations of videos have the double disadvantage of being laborious to carry out and having a subjective element.

In order to overcome these constraints, the BovMovie2Pred consortium proposes to organise one or more data challenges within the framework of the RAMP (Rapid Analytics and Model Prototyping) platform of the DATA-IA Convergences Institute. These challenges will bring together the skills of experts on AI issues as well as those of

students or PhD students in this field. The expertise of the consortium, coupled with existing annotation work, will make it possible at the end of the project to provide researchers in developmental biology with a classification methodology requiring as little video annotation as possible.

Research units involved and partners

INRAE scientific division	INRAE research units	Expertises
Mathematics, computer and data sciences, digital technologies	MaIAGE	Video analysis
	MIA Paris Saclay	Statistical learning
Animal physiology and livestock systems	BREED	Developmental biology
External partners		**Expertises**
Inria	Équipe projet SERPICO	Video analysis
	DATA-IA	Data challenge platform