



# Interactive Machine Learning for More Expressive Game Interactions

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# Who am I?

- I'm a massive nerd about games, tech and science
- 3<sup>rd</sup> year IGGI PhD Student
- Love programming, software architecture and AI
- Deep interest in player psychology



# Before we start...

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- Can you think of at least **3 examples** of devices/controller that use **sensors**?

Fridge

Mobile phone

VR headset



# My research question

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How **game controls customisation** in **VR** affects **player experience** ?

 @dingstweets



Dr Sebastian  
Deterding



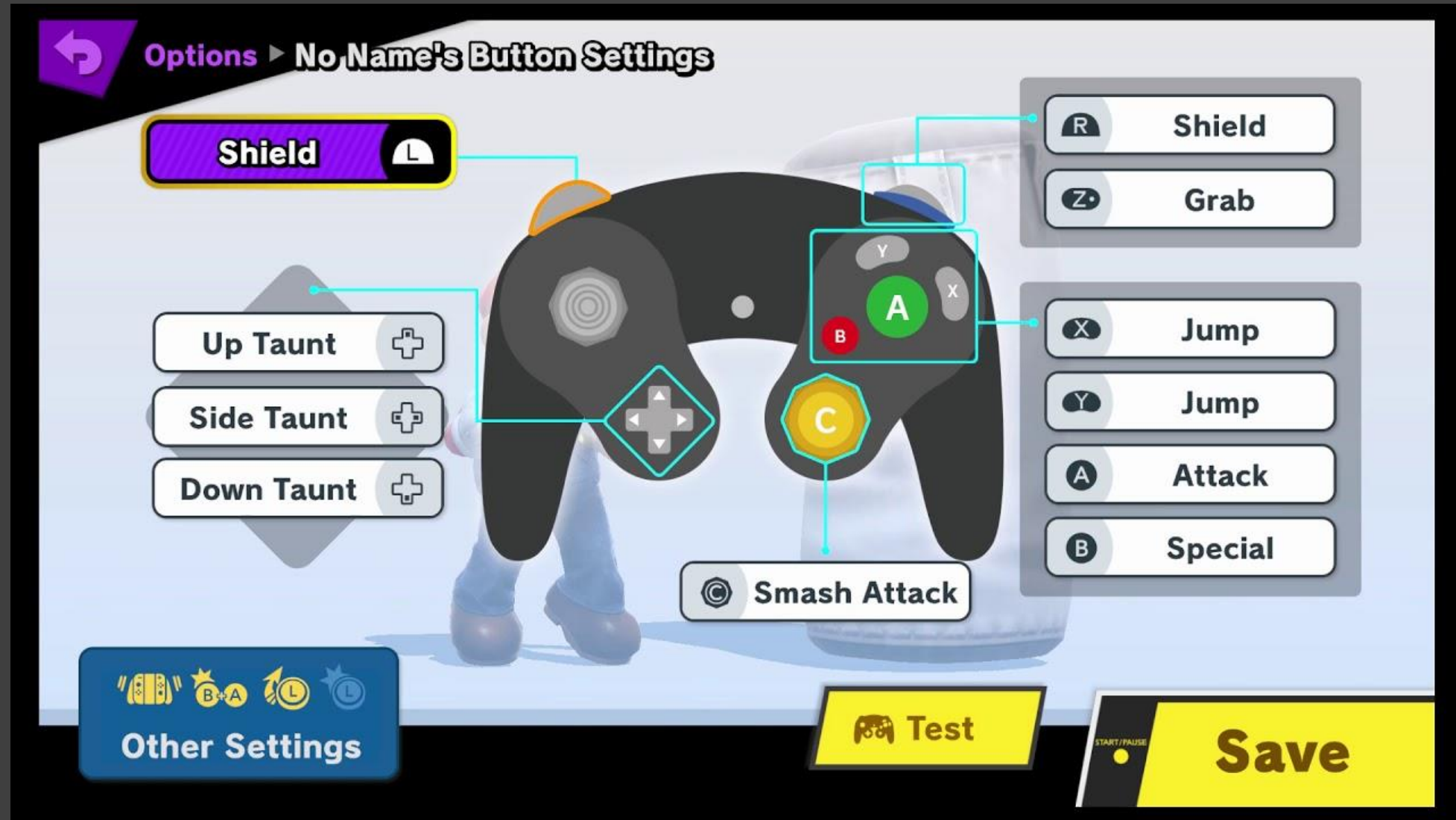
 @marcogillies



Dr Marco  
Gillies



# Controls Remapping





# Problem

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- What about sensor interactions?
- How can we customise sensor-based interactions?

# Problems with Sensors

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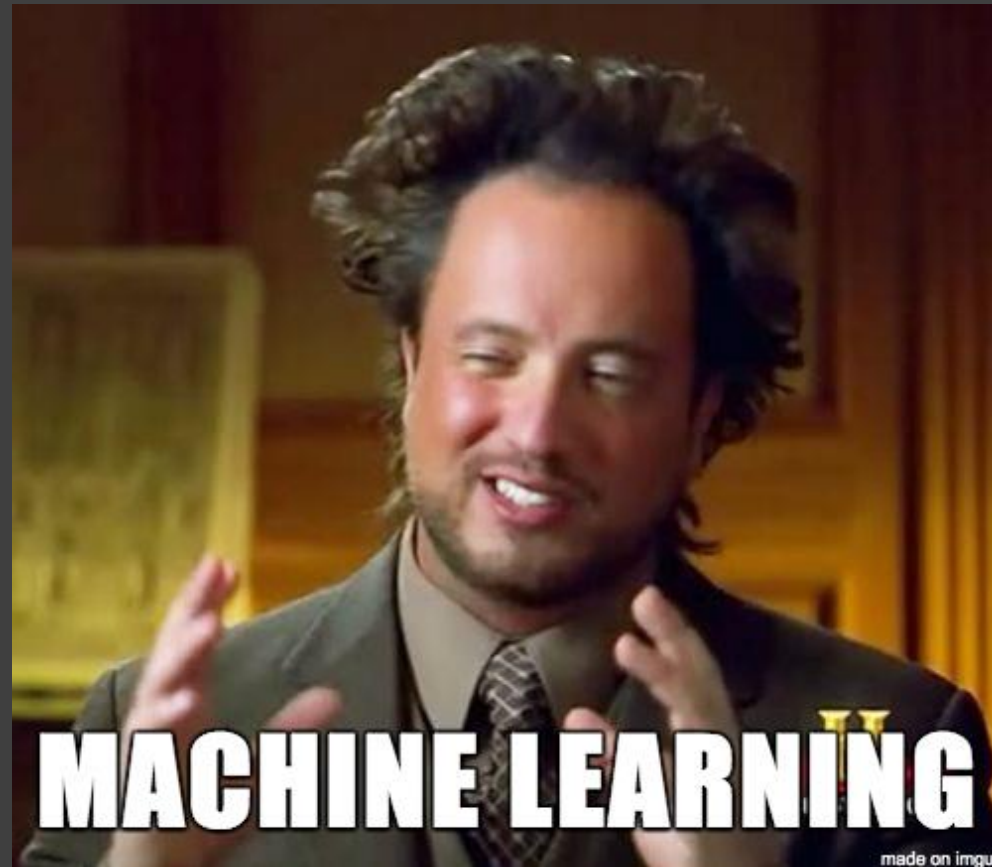
- Hard to implement accurate sensor analysis when sensors are high dimensional or noisy
- Players might want to customise sensor-based game interfaces (like gamepads)
- Disabled players might need a highly customisable unconventional interface



# IML can be a solution

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- But what is IML?



# Interactive Machine Learning (IML)

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*“IML is Machine Learning with a human in the learning loop,...  
observing the result of learning...  
and providing examples of a human action or activity to improve the learning outcome.”*

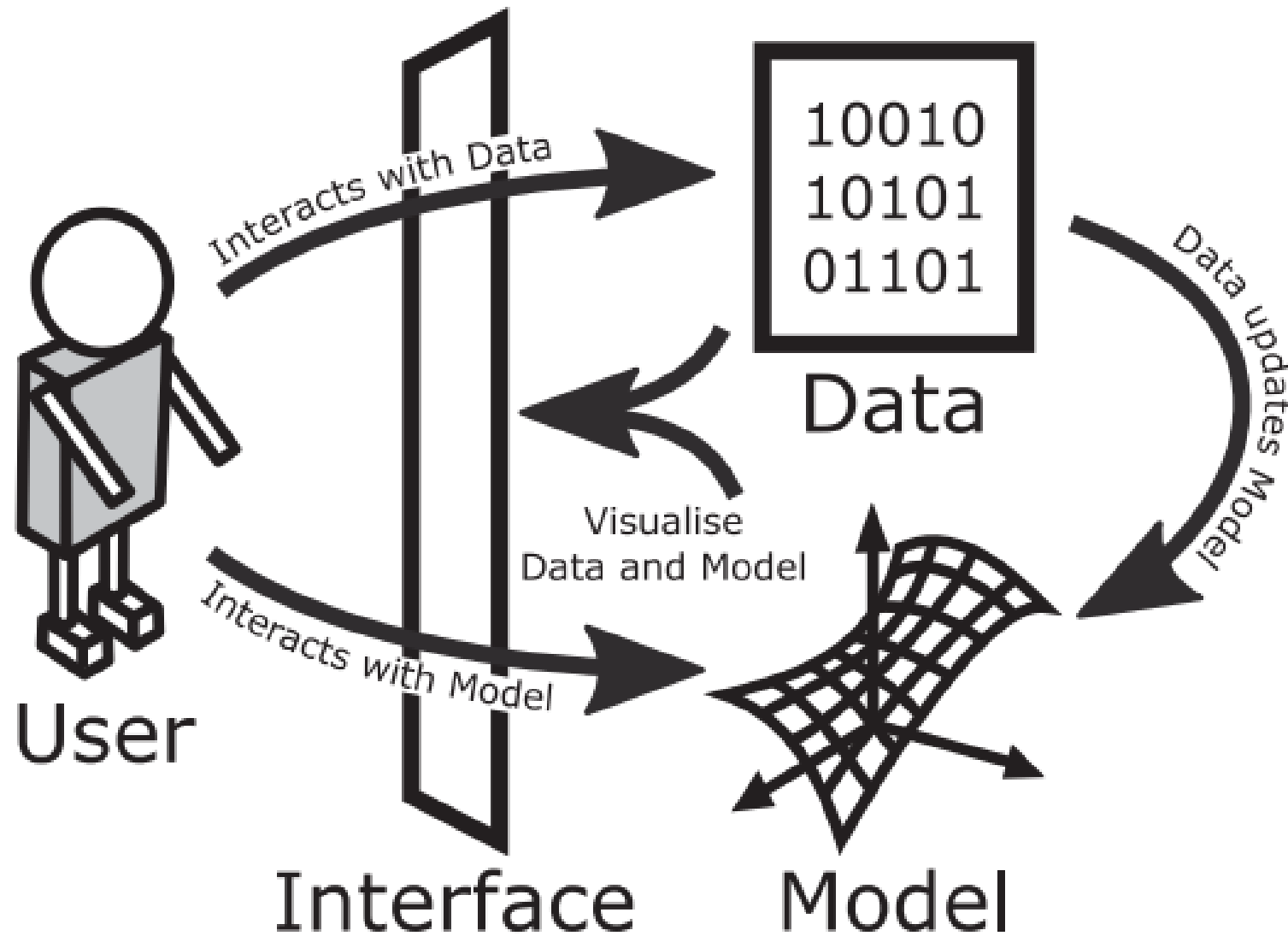


Dr Brad Knox



Massachusetts  
Institute of  
Technology

# Interactive Machine Learning (IML)



# This is cool, but how do we use it?

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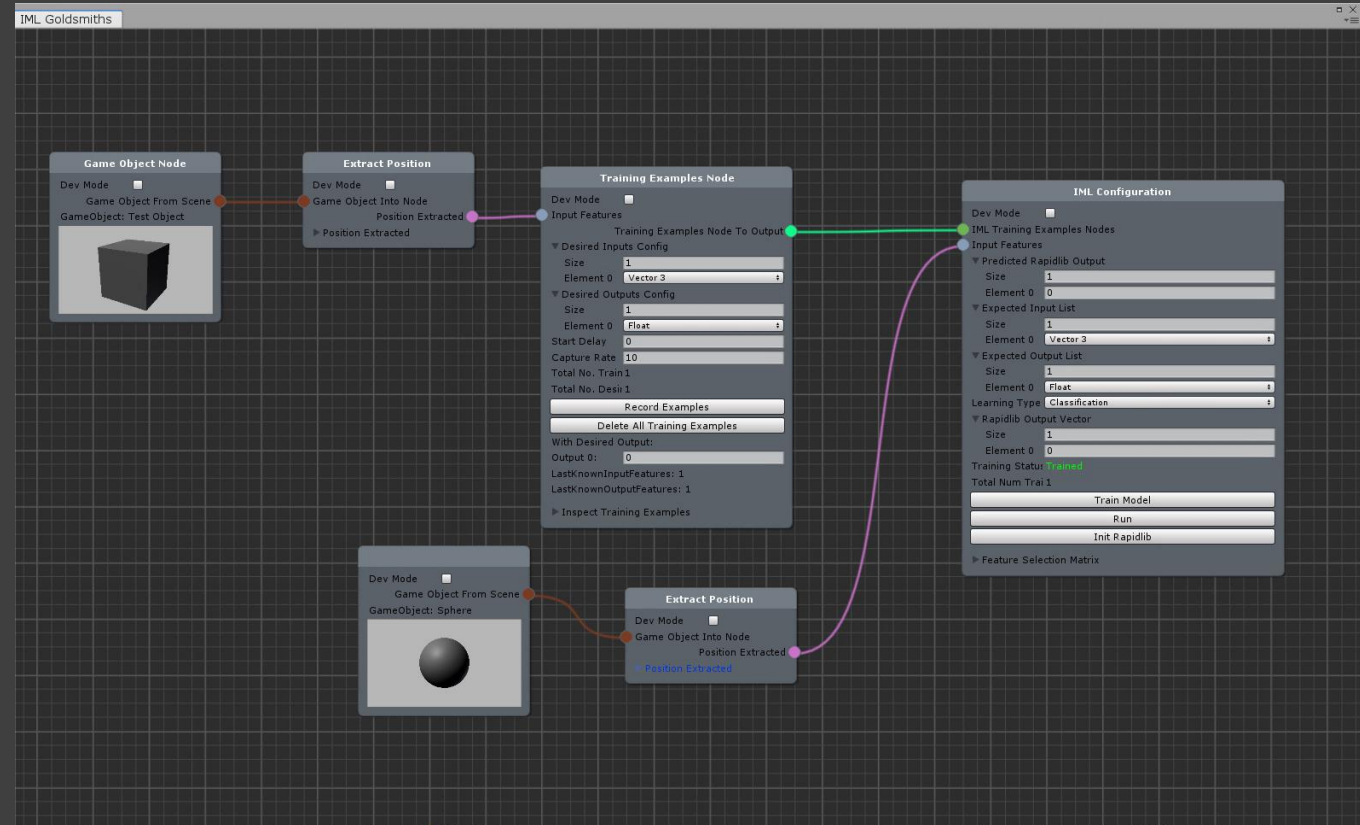
- I have your answer:

# InteractML.com



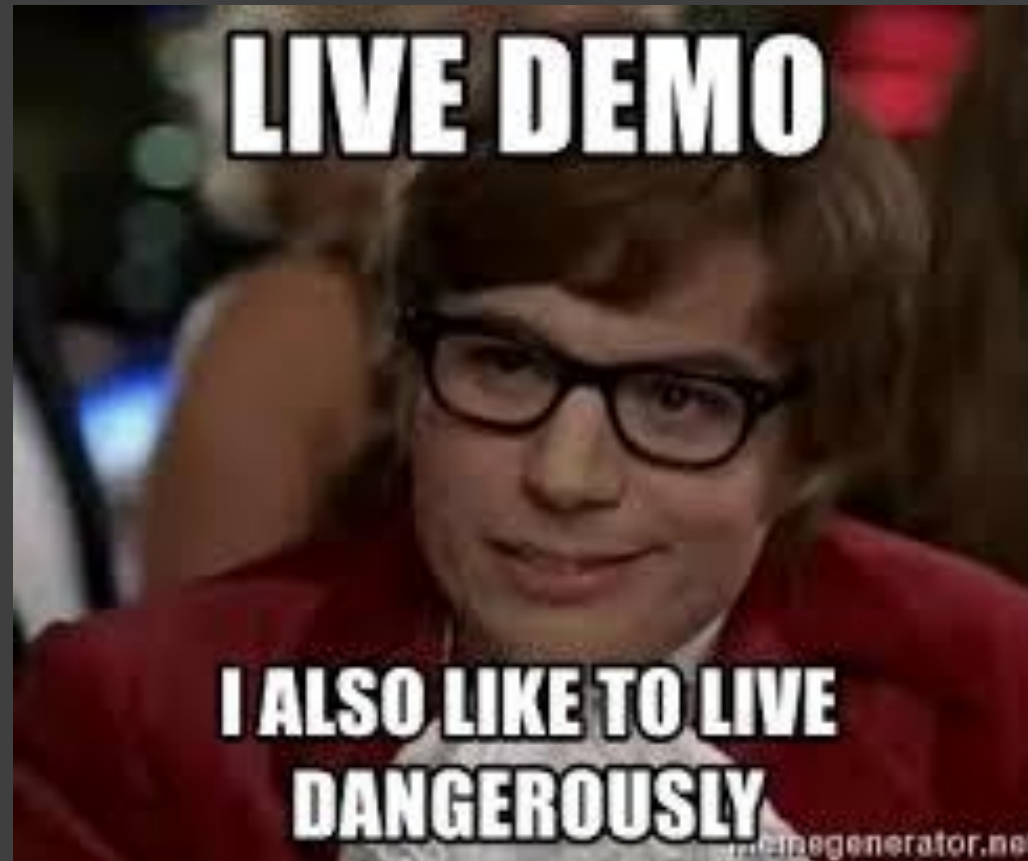
# Our solution: InteractML

- Unity3D plugin
- Visual node programming
- Open-source



# InteractML DEMO

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# Research Questions for my Thesis

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- What is a viable architecture that enables players to customise motion controls in games?
  - Is InteractML a valid solution?
- What are the experiential dimensions involved in the customisation of VR motion controls, if any?



# Study Design

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- Qualitative Exploration of the Design Space of InteractML VR
  - IML VR Prototype where player can customise a control scheme (punching)
  - Post-session interview (thematic analysis on answers)
  - Semantic Exploration Player Experience (card sorting exercise)





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