Unpacking AI and ML projects that drive innovation and deliver business value

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AI in the Workforce

There is a lot of excitement about AI at the moment

What jobs can we replace with AI?

What processes can now be completed by an AI model?

No code software making developers obsolete

TECH

Robots could take over 20 million jobs by 2030, study claims

AI is quietly eating up the world's workforce with job automation

Augment Instead of Replace

Greater value can be achieved from augmentation than replacement

Humans and AI need to learn to work together via Human-in-the-Loop AI

Faster path to innovating

Augmenting can be a best of both worlds solution

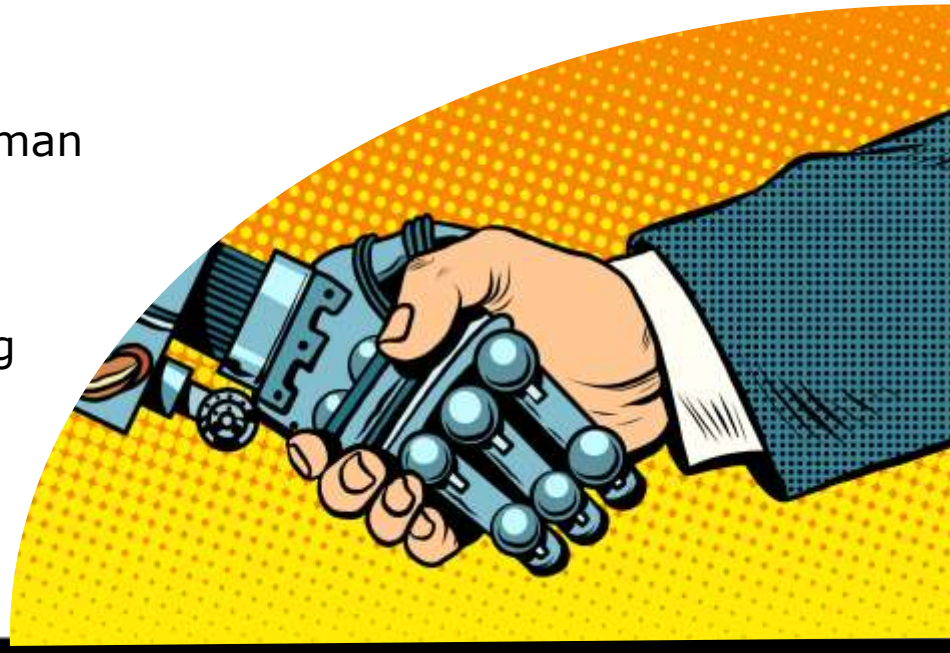
What is Human-In-The-Loop AI?

When an AI model is unable to completely solve a problem and needs human intervention

Very common to have humans controlling ML training

Human-in-the-loop AI predicts or recommends an outcome but the human intercepts before the action

The person may agree or disagree, or make a final decision considering other factors as well as the model output



More Value, Less Work

We need to change the mindset that AI is not useful until it exceeds human performance

Starts to become useful far before then as a screening tool

If an AI model can shortlist potential issues for a person to validate then you are achieving nearly all the value

Low precision, high recall AI is ideal for human-in-the-loop

Case Study: Powerline Assessment

Assessors at Ausnet Services have to manually examine 1 million photos a year looking for defects

These defects are rare and impact <2% of photos

The ML model had a precision of 50% but since defects were so rare, this cut down the focus images from 1 million to 40,000

Saving over 90% of the cost and effort with an 'imperfect' model

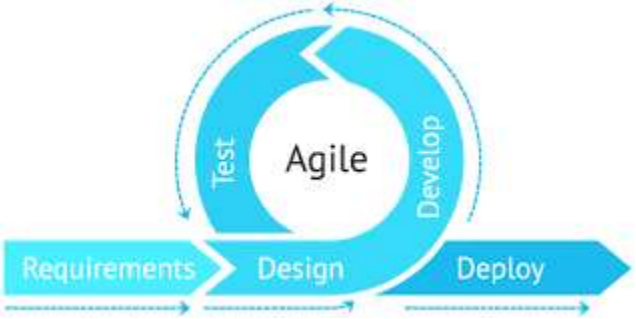
Allows Iterative Development

Iterative development is now considered best practice in software development i.e. Agile delivery

Augmenting human process allows AI to be incorporated iteratively, rather than going from 100% human to 100% AI overnight

Augmentation is a lower risk approach and it allows people to be fully confident with the AI predictions and how and why it goes wrong

When augmenting you can identify the point at which returns start diminishing and maximise value



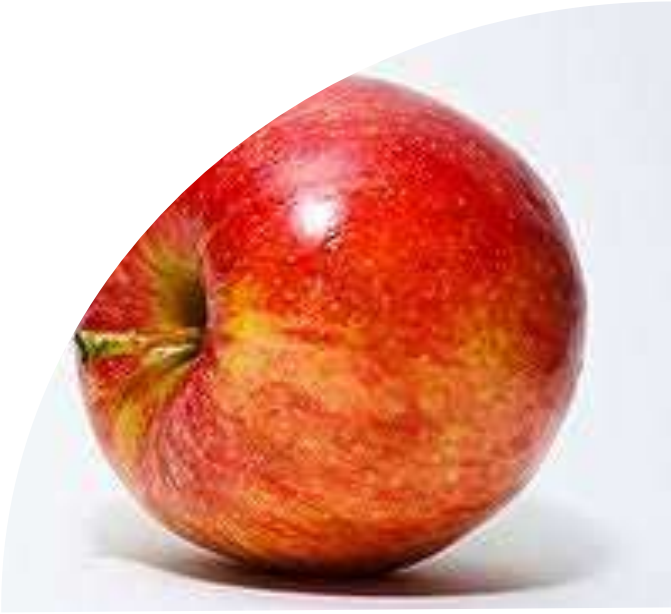
Case Study: Fresh Produce Recognition

AI used to identify fruit or vegetables and select correct item on scales

Initially might present a shortlist if accuracy isn't high enough

Customer selection helps train the model

Customers benefit from day one, as they require fewer clicks



Workforce Buy In

Nobody wants to help train an AI model to replace themselves!

People are often keen to help train a model to eliminate the worst parts of their jobs

Augmentation usually removes the most repetitive, laborious parts of people's roles but leaves the decision making and oversight to them

Retains the value of human judgement and understanding

Careful workforce planning to ensure skills aren't islanded

Increased Accuracy

Humans and AI are very different and make different types of mistakes

People often miss slightly obscured things or become fatigued and start making mistakes

AI does not become fatigued but may make errors that seem very obvious to humans

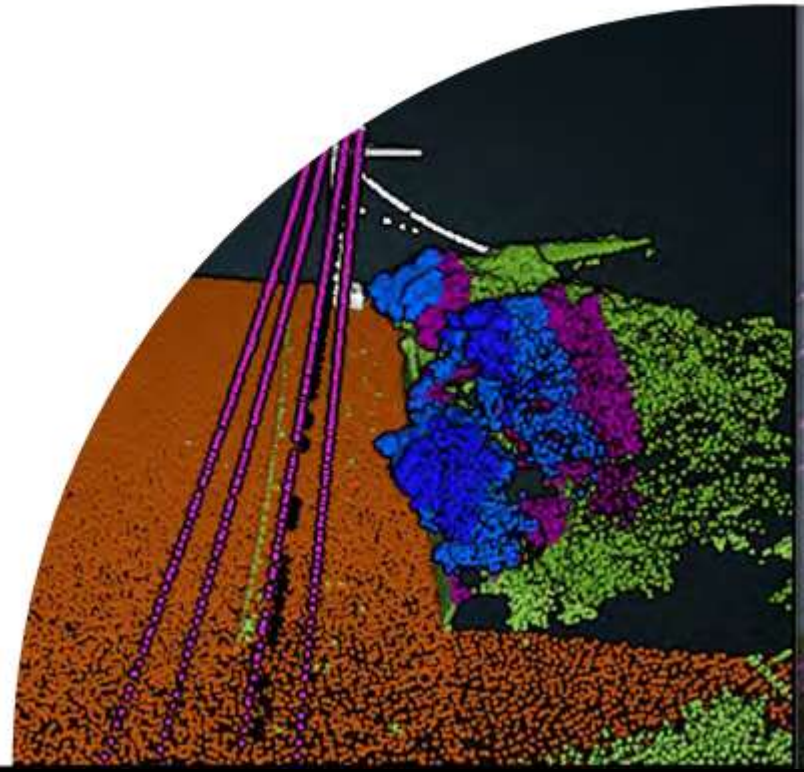
2018 Stanford study found human-in-the-loop AI model works better than AI or doctors on their own

Case Study: Point Cloud Classification

AI errors are usually large and obvious to humans (e.g. shed as tree)

Human errors tend to be smaller (missed points or sides of buildings)

Using AI for the first pass and humans to audit resulted in far higher overall accuracy



More Ethical AI

Human-in-the-loop AI is easier to align with Australian AI Ethics principles

Fulfills the call for human oversight of AI systems

Human judgment can be used effectively to ensure human-centred values are applied

Results are more transparent and explainable because of the human in the loop

Case Study: Storm Consequence

Storm events have a large impact on powerline networks

Knowing the expected impact can allow networks to prepare

Weather forecasts can be combined with historical damage records to model likely impact

Human intervention allows ethical considerations such as what areas have had prolonged outages recently or vulnerable populations

Supports Immediate Action

AI provides the most value when an immediate action can be taken rather than insights derived after the fact

Using human-in-the-loop can make the path to immediate action easier

A lower accuracy barrier is required if a person is making the final decision

People an receive real time alerts about an issue or event and make the final decision to take action or not

Considerations for Human-In-The-Loop AI

What are people really good at?

What would machines be better at?

Where are the logical interaction points and what needs to be known?

What is the lowest level of accuracy needed for an AI model to create value?

Don’t try and eliminate human activity as the primary goal

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