

If you can manage people, you can manage AI



ProjectCHAT Industry Symposium - Adelaide 18-20 Mar 2024

Never Stand Still

Capability Systems Centre



APAC Entrepreneur

<https://apacentrepreneur.com/ten-ways-to-improve-your-people-management-skills/>

- Introduction
- People Management Skills
- AI Management Skills
- Transferrable Skills
- Recommendations for Building Knowledge
- Conclusion



Forbes, B. Marr (2020)

<https://www.forbes.com/sites/bernardmarr/2020/08/03/3-important-ways-artificial-intelligence-will-transform-your-business-and-turbocharge-success/?sh=a49eb4c620fa>

- Google of the title of this presentation gives:
 - AI in Managing People and Organizations: Should We Fear ...
 - How AI Can Help You Become A More Effective Manager
 - People Management in AI: Top 5 Strategies for Success
 - How Can Managers Use Artificial Intelligence?
 - How Artificial Intelligence Will Redefine Management
 - AI for Managers: how managers can use Artificial Intelligence ...
 - How AI Will Transform Management (+27 Tools To Use)
 - How to Manage Artificial Intelligence in the Workplace
 - What if AI could manage better than your manager?
 - How Will AI Help Good Managers Be Great?
- These mostly use the fear of takeover to motivate you to adopt new skills & be prepared to augment your role
- This presentation should reassure you that you already have most of the skills & just need the confidence and support to use them

<https://anthropos.work/blog/ai-for-managers/>

5 Key Components of People Management



5 Winning People Management Skills for 2019

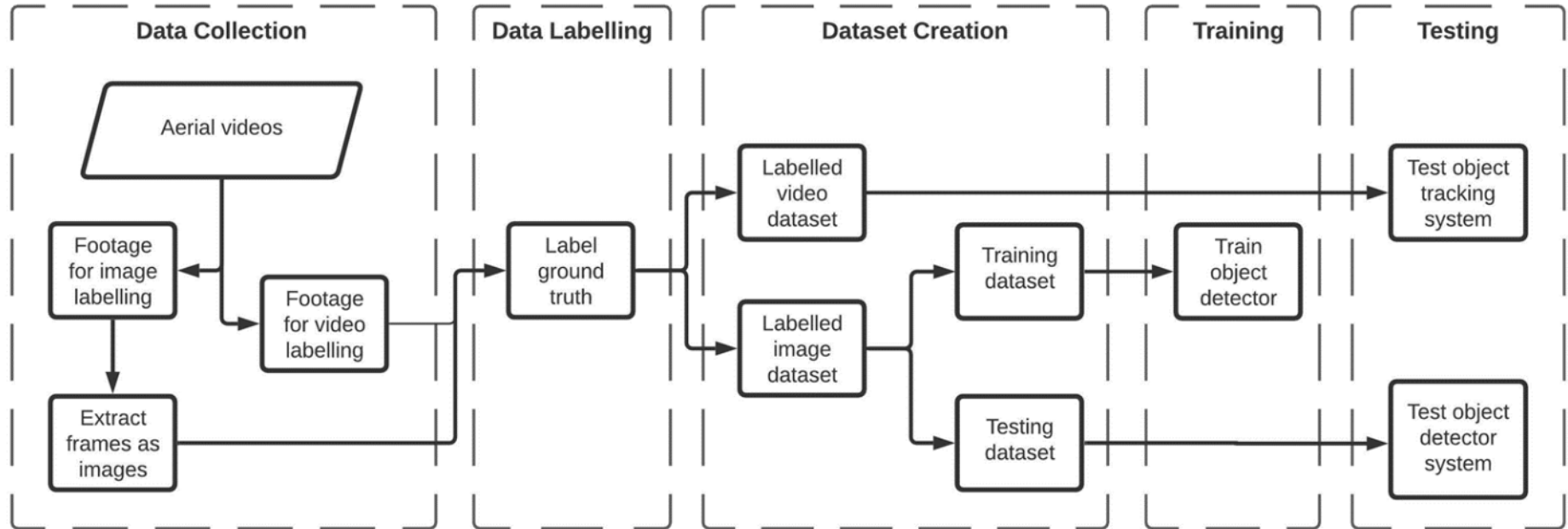


So how do you build these skills with AI?

Example 1: SkyTracker: Detection & Tracking of Small Objects from UAV

Taylor Spaulding (2021)



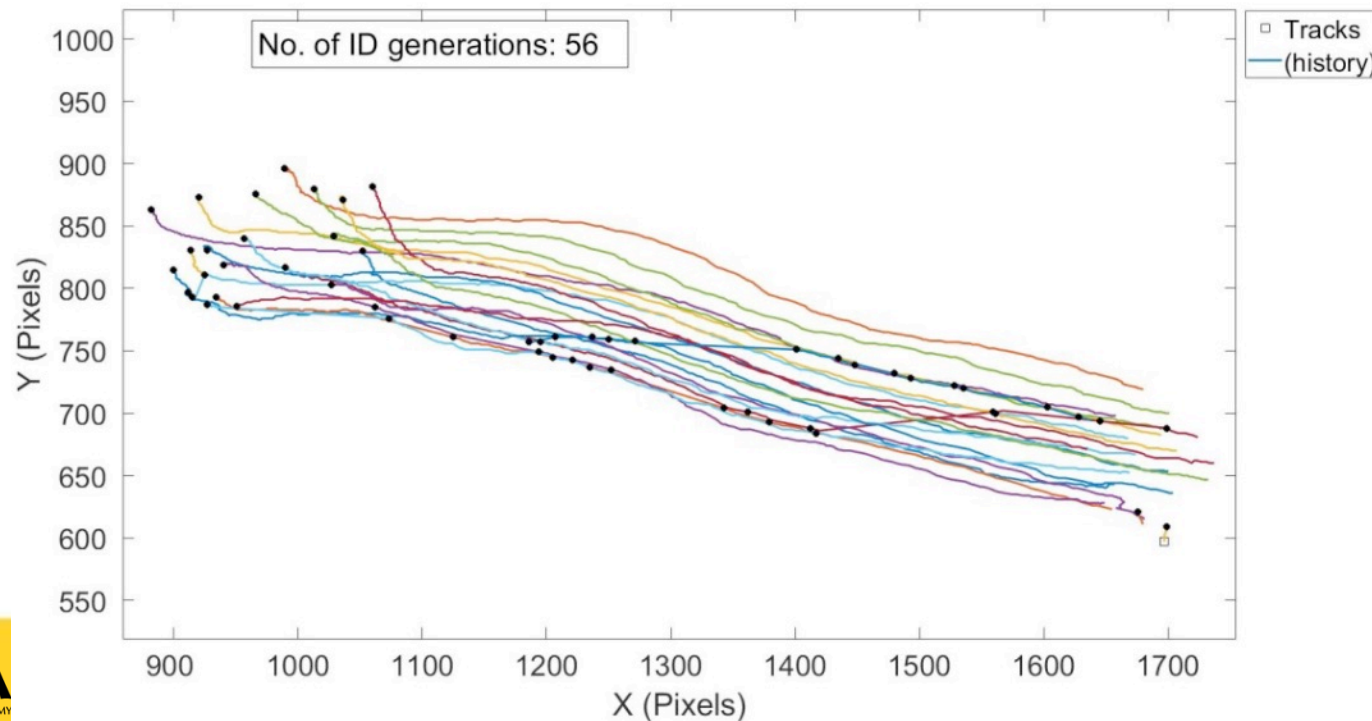


Due to the amount of data requiring labelling, a data labelling service was used. Each of the image datasets was broken down into 70% training and 30% testing, respectively.

Data format	Details
Images	647 (60m)
	379 (100m)
Videos	10 seconds (60m)
	10 seconds (100m)
	8 seconds (60m)

Several different YOLOv4 networks were trained within Google Colab. Each network was trained for 6000 iterations using a batch size of 64 and a learning rate of 1×10^{-3} . The networks were validated using the entire testing dataset every 100 iterations after the first 1000 iterations. The mAP score for that iteration was then evaluated against the previous mAP result, and if it was an improvement, the weights file was updated.

Once the detection training was complete, the weights files were used to generate a new YOLOv4 network in TensorFlow for integration with the DeepSORT network. After successfully generating the TensorFlow YOLO network, the video footage was processed using the DeepSORT tracking network. This was also completed within Google Colab using a Tesla V100 16GB GPU.



Example 2: Demonstrate how AI/ML can assist soldiers in a tactical environment

Braydon Rainbow (2021)

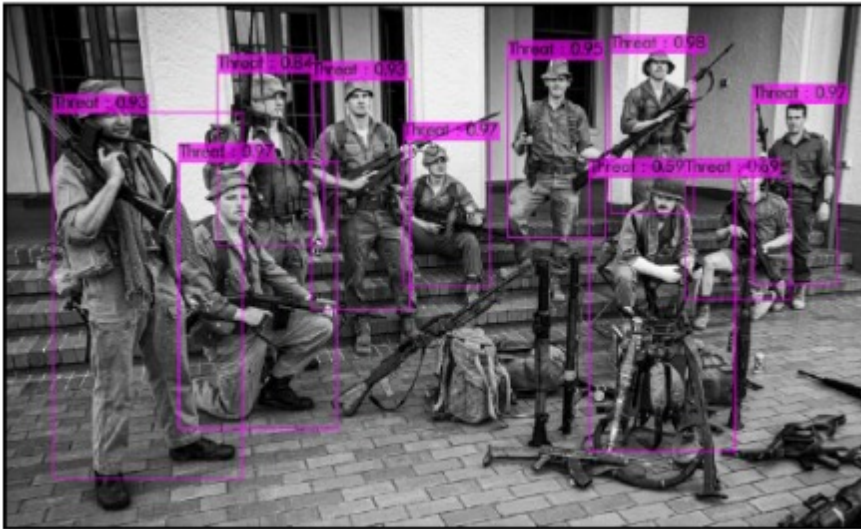


Figure 5 - Threat Detector



Figure 6 – Weapons detector

A Scaled-YOLOv4 weights file was used for the real-time detection over the webcam feed at 16 fps and to recognise threats in a video game. The detector was trained using a data set from the google open image dataset; 1500 images

12 participants were asked if the video game footage with the overlaid detector enabled them to recognise targets more quickly; 91.7% responded, saying it did.

The same question was asked again but asking if it enabled them to identify targets more accurately. 33% responded saying it did, 33% responded saying it did not, and 33% were unsure if it did. The main themes are below:

- The bounding boxes drew the viewer's attention more quickly; the accuracy in some instances was not where it needs to be for a system like this, however.
- The detector was more accurate at short range than long. However, the number of detections at short range was distracting even though it was accurate. If the detector's confidence were higher and therefore less sensitive, it would have been less distracting.
- Yes, it recognised them faster; however, each detection had to be investigated individually to ensure accuracy.
- Most helpful in detecting movement in the long-range video where targets were more difficult to identify
- Faster recognition allowed the viewer to have additional time to assess the broader situation.



The participants were asked if they saw any issues with using the detector used in the video game, with 83.3% responding saying that they did. The issues raised were as follows:

- Latency issues in real-time detection may affect the detectors' ability to be of use
- Over-reliance on the system by a soldier may reduce the individuals critical thinking
- Soldier acting on incorrect, false detection.
- The system cannot be taught ethics.
- Even a well-trained detector that accurately detects weapons to label an individual as a threat cannot consider external factors such as why that individual has a weapon; for example, the individual might be a farmer.
- Crowded areas may result in a high number of false positives.
- User distracted from a false positive
- A Heads Up Display (HUD) is another thing for a soldier to carry, maintain, and keep charged.
- May become vulnerable to hacking or interference from adversaries.

Example 3: Prospects for machine learning in dynamic recovery of underwater vehicles

James Keane (2019-21); Jack Delaney (2021); Randall McCutcheon (ongoing)



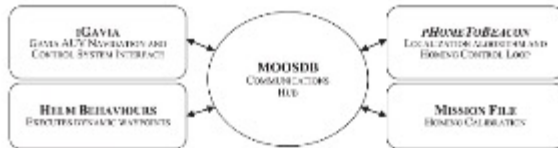
AI Skills

Transferrable Skills

Building Knowledge

Conclusions

Backseat driver estimates transponder position and broadcasts waypoints for homing



AUV then sets its own waypoints to achieve adaptive behaviour



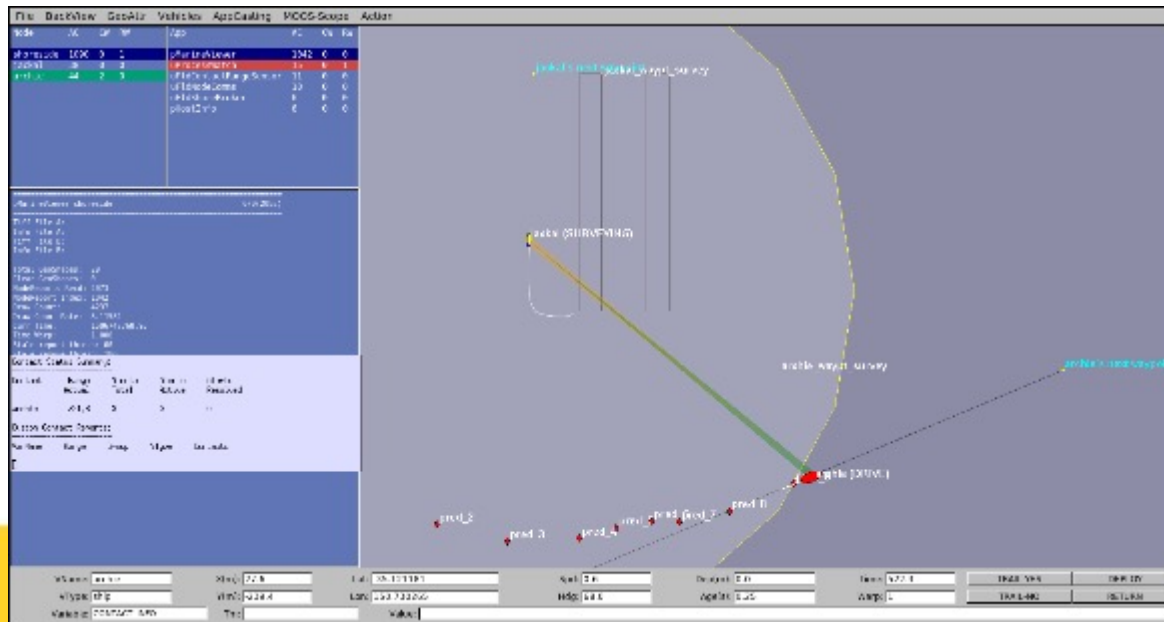
AUV on mission



Acoustic transponder towed behind vessel

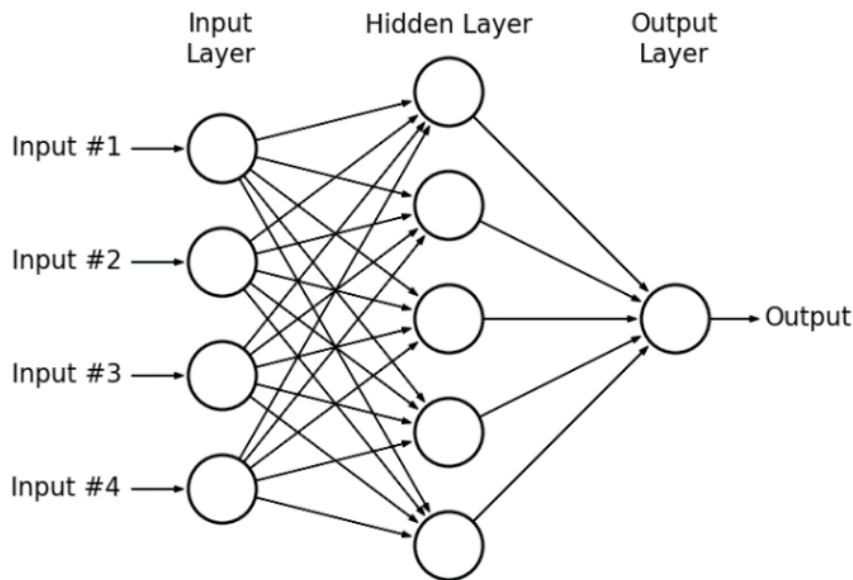
AUV pings transponder

*Transponder replies
(Range = time *
velocity of sound through
water)*

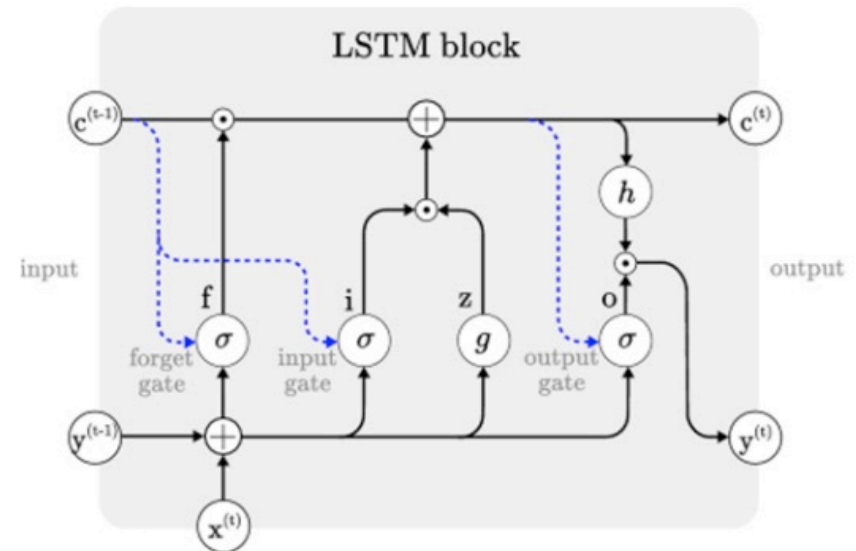


Range-only homing to a moving target in simulation

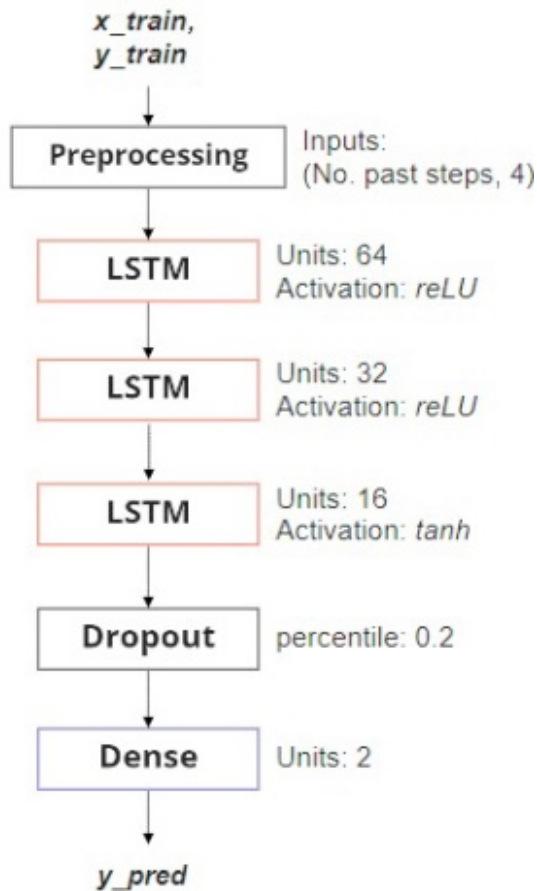
- James (Keane & Joiner, 2022) proved you can do this 'sufficiently using classic control
- Jack demonstrated AI ML might outperform classic control (unpublished)
- McCutcheon is continuing their research



Multi-layer Perceptron model
(Mohamed et al. 2016)



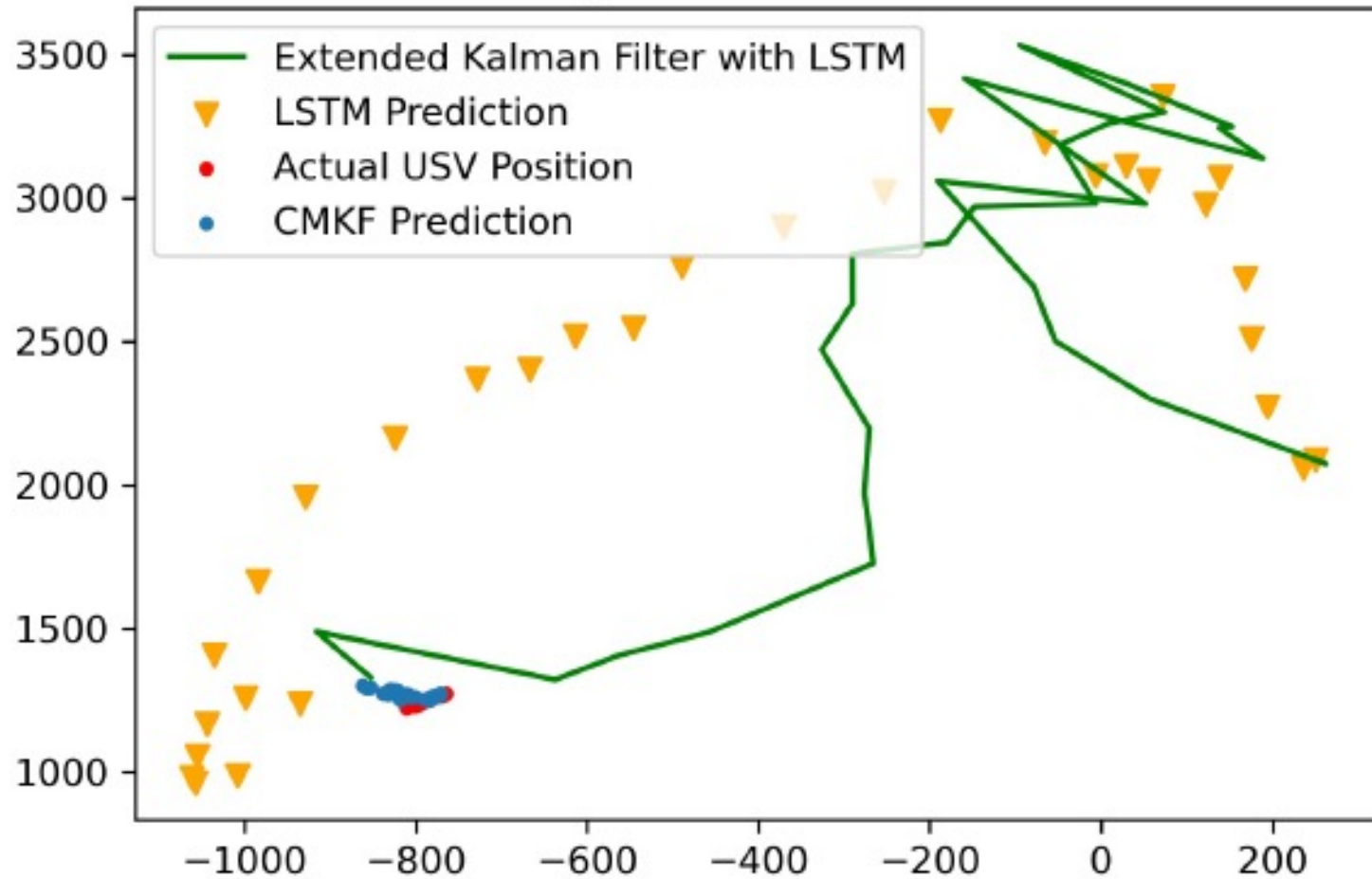
A LSTM block (Van Houdt et al. 2020)



- *The more stacked LSTM layers a model has, the greater its depth of computational ability.*
- *This model was built using 3 stacked LSTM layers, followed by a dropout, then a dense layer.*
- *A dropout is a standard method to drop nodes during training to replicate larger changing architectures. Use of a dropout is intended to reduce overfitting, and its inclusion was justified in this model (Keras 2021).*
- *A dense layer is intended to shape the output for use, and connect to each of the nodes in the previous layer.*

Delaney's 3-stage LSTM
Neural Architecture

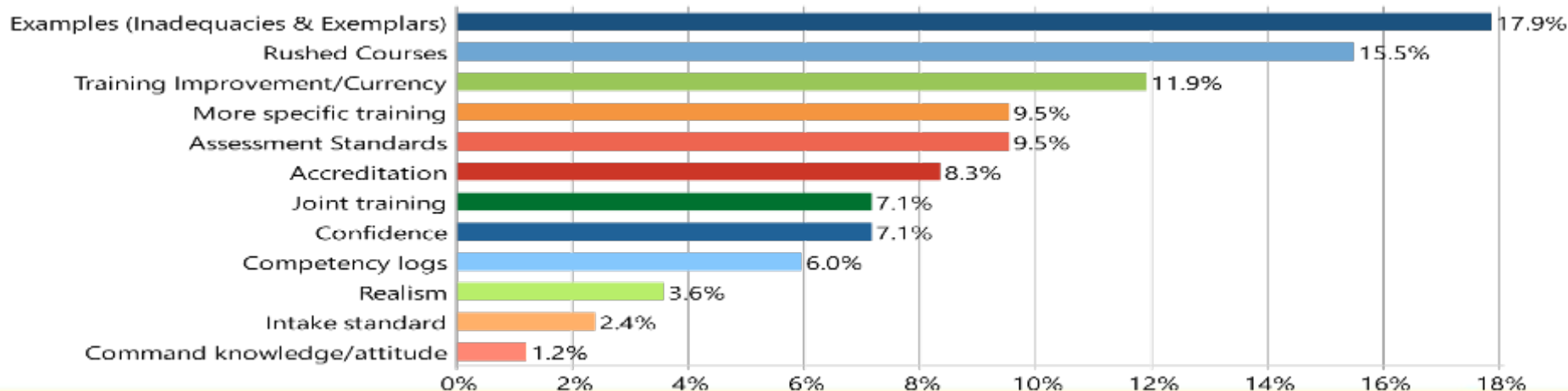
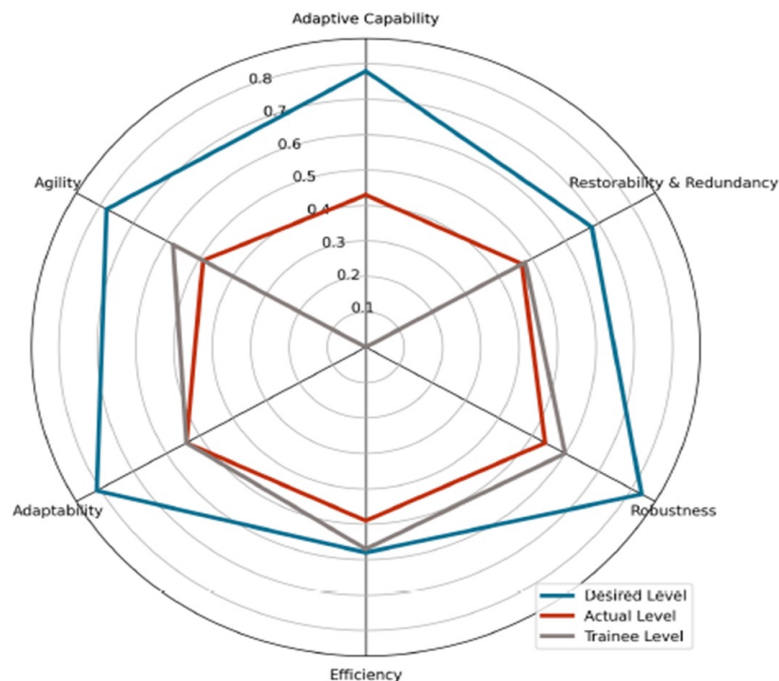
Testing Results ~ Field Data



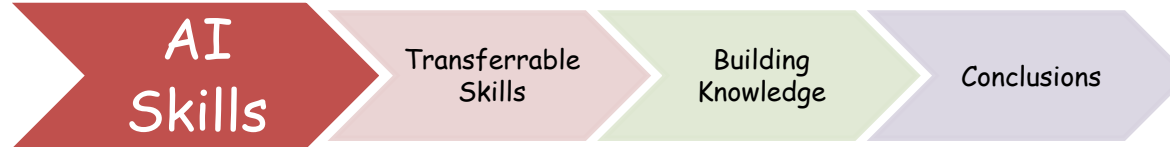
Example 4: Natural Language Processor (NLP) for Thematic Analysis of Survey Responses

Lucinda Bell (2022)

Quantitative Survey Results on six resilience
attributes (Jnitova et al., 2021)

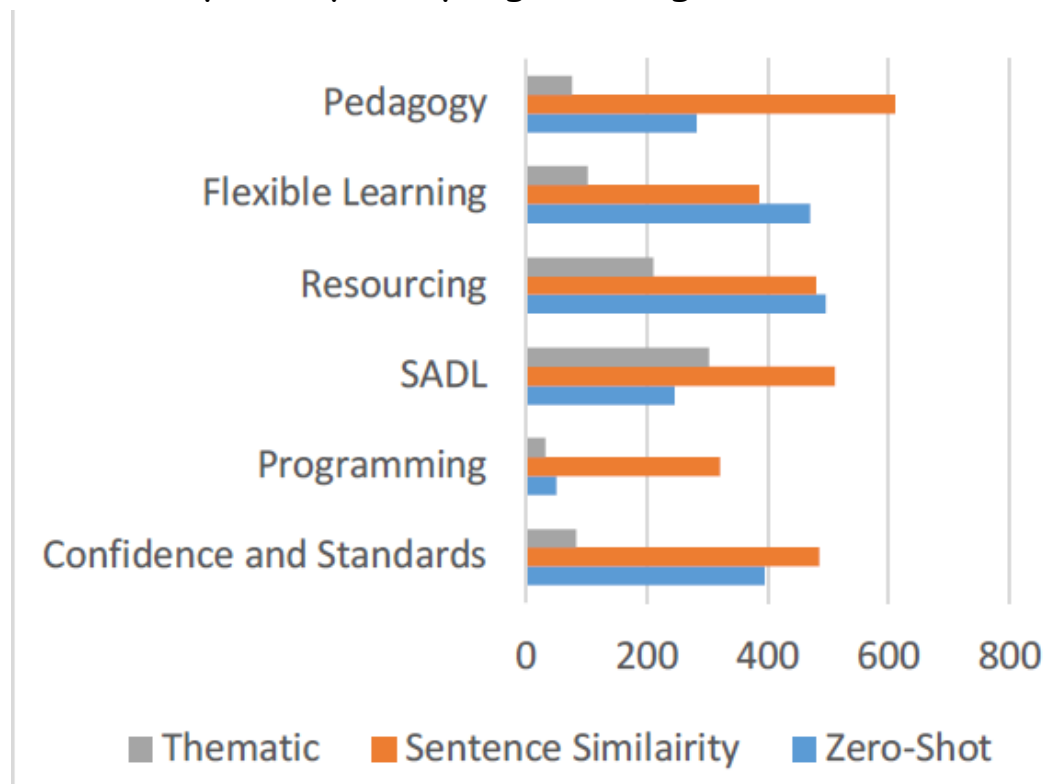


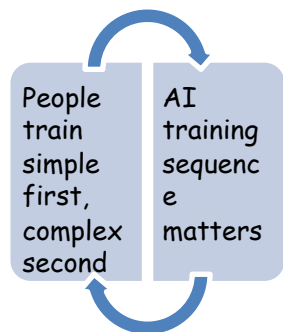
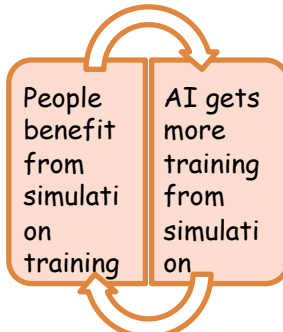
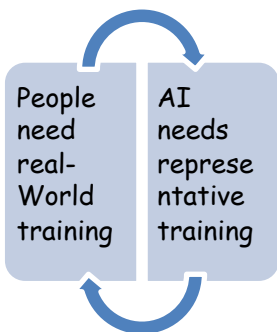
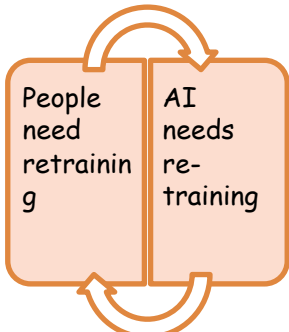
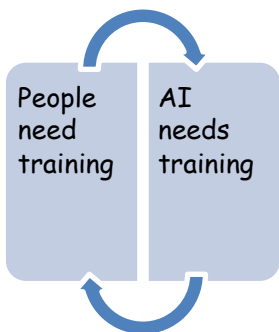
Confidence and Standards - Sub-Themes and Key
Findings (Jnitova, 2021)



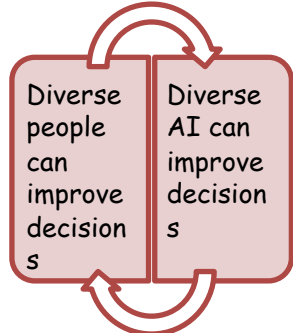
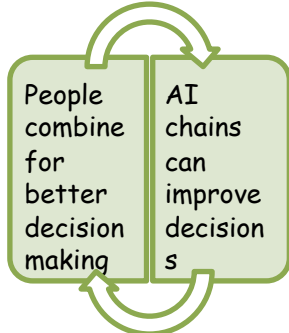
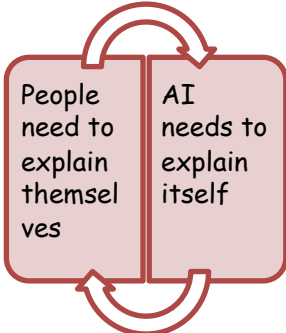
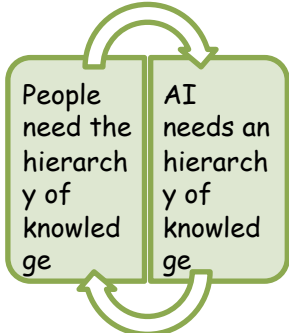
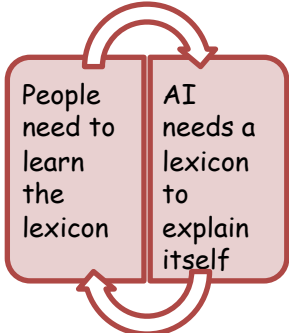
Zero-shot involves NLP descriptors from unseen classes to predict the class without training data, training cases are still required but only for validation (Romera-Paredes and Torr, 2015).

Zero-shot & sentence similarity produced a similar number of results for flexible learning, resourcing & confidence & standards. However, had greater discrepancies for the other themes, especially for programming.

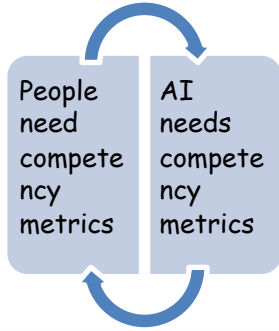
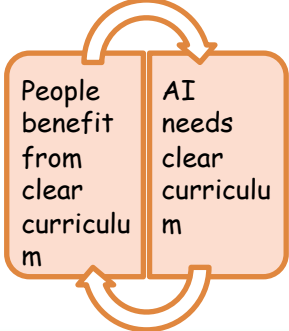
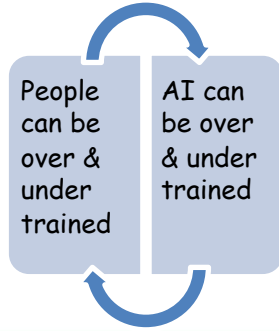
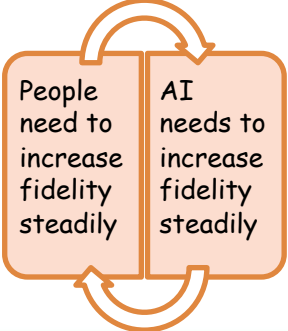
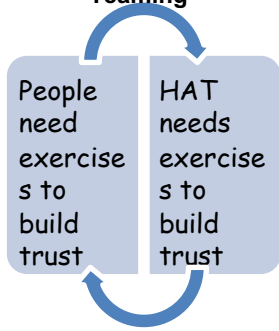




Ontology



Human-Autonomy Teaming



Low End =

The 9 AI Skills You Need NOW to Stay
Ahead of 97% of People

<https://www.youtube.com/watch?v=57BKHfavqzY>



Step-by-step guide to AI projects

<https://www.youtube.com/watch?v=2caALBeiMAo>



High End #1 = MIT AI: IMPLICATIONS FOR BUSINESS STRATEGY

6-week online course 6-8 hours per week

- 1 A practical grounding in artificial intelligence (AI) and its business applications, equipping you with the knowledge and confidence you need to **transform your organization** into an innovative, efficient, and sustainable company of the future.
- 2 The ability to lead **informed, strategic decision-making** and **augment business performance** by integrating key AI management and leadership insights into the way your organization operates.

COURSE CURRICULUM

Over the duration of this online program, you'll work through the following modules:

Module 1: An Introduction to Artificial Intelligence

Deduce how to gain strategic advantage through the use of different kinds of intelligence.

Module 2: Machine Learning in Business

Evaluate the appropriateness of a business application for machine learning.

Module 3: Natural Language Processing in Business

Evaluate the appropriateness of a business application for natural language processing.

Module 4: Robotics in Business

Evaluate the appropriateness of a business application for robotics.

Module 5: Artificial Intelligence in Business and Society

Assess the impact of AI on the future of work and society.

Module 6: The Future of Artificial Intelligence

Develop a road map for an organization to gain strategic advantage through the use of artificial intelligence.

High End = ISTQB AI Testing Certification

ISTQB Certified Tester AI Testing certification is designed for everyone involved in testing AI-based systems and/or Artificial Intelligence (AI) for testing. This includes people in roles such as testers, test analysts, data analysts, test engineers, test consultants, test managers, user acceptance testers, and software developers. AI will not remove the need for software testers. In fact, [in an AI world, software testing will be the last and most important profession needed.](#)

ISTQB AI Testing certification is also the right choice for anyone who wants a basic understanding of testing AI-based systems and/or AI for testing, such as project managers, quality managers, software development managers, business analysts, operations team members, IT directors, and management consultants. Learn more about [the role of testers in an AI-driven world.](#)

ISTQB AI Testing proves your knowledge in these important AI areas:

- Quality Characteristics for AI-Based Systems
- Machine Learning (ML)
- ML - Data
- ML Functional Performance Metrics
- ML - Neural Networks and Testing
- Testing AI-Based Systems Overview
- Testing AI-Specific Quality Characteristics
- Methods and Techniques for the Testing of AI-Based Systems
- Test Environments for AI-Based Systems
- Using AI for Testing

- Empower your young graduate engineers to undertake the AI work, they will surprise you

This is partly generational !

- You will find many parallels between people management skills & AI ML that help you build those cognitive bridges & contribute

If it was human, what would you try & do?

- There is almost nothing truly autonomous in AI ML, it always comes back to human-autonomy teaming & thus mixed humans & AI, you must involve both in usability testing & trust building

Don't do a Robodebt - trial it & act on the trial !

- Do the generational thing, watch a youtube video, take an MIT short course, get a micro-credentialled certification

See recommended!