

Main Deliverable

individual **AI Report** on:

a real-life **machine learning use-case** of an existing **data product** solution.

AI accommodates & exploits "complex" human behaviour by means of automatised regulatory systems that are mechanical, biological, physical and/or cognitive in nature.

The necessity machine learning fall into 4 main categories:

When humans can't code rules for certain problems.

When you need to scale a solution to millions of cases.

When you can do it manually, but it's not cost-efficient.

When you have a massive dataset without obvious patterns.

A data product is any application or tool using data science combined with computing or statistical algorithms ---required by the AI-model--- that autonomously aids businesses (profit or non-profit) to provide a solution to a given societal or proprietary problem solely based on sampling data set.

It comprises a human-centered interface, creating meaningful insights derived from data science principles & methodologies such as:

- *Human Factors*
- *Predictive Analytics*
- *Descriptive Data Modeling*
- *Data Mining*
- *Machine Learning*
- *Risk Management*
- *Advanced statistics*

Backbone AI Report

PART I Problem Selection, Definition & Motivation + Human in the Loop

- Defining Artificial Intelligence (in your own words)
- Why Do you Need AI? (What AI problem/use-case are you trying to solve)
- Designate Capability Domain & Application Domain
- Mission Statement + Definition of Done

PART II Data (Product) Description, Preparation & Annotation

- Defining Data Science (in your own words)
- Designate Data Type used
 - Datasets used
 - Data Labelling Requirements (Yes supervised ML/NO unsupervised ML)
 - Data Pipeline outline
 - Data Visualisation
- Description of Data Product Components & Techniques Involved

PART III AI Model selection, coding, training and testing

PART IV Critical Reflection & Ethical Considerations

- Evaluate whether the selected model solves the problem at hand
- to ensure its suitability to your data-product solution.
- Assess popularity / “ground-breaking-ness”
- Review potential issues & existing documentation

Studied Literature

APPENDIX B:

PART II Data (Product) Description, Preparation & Annotation



Curriculum Development in Data Science and Artificial Intelligence

599600-EPP-1-2018-1-TH-EPPKA2-CBHE-JP

Deliverable 2.5: DS & AI Course Outlines

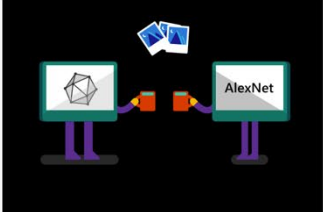
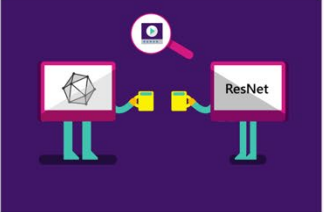
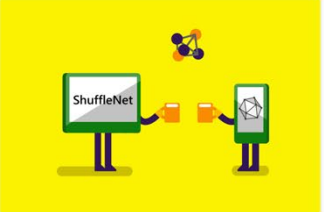

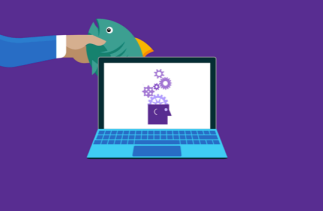
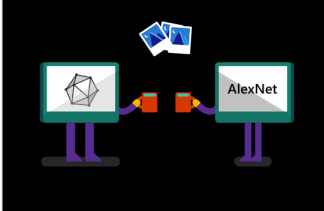

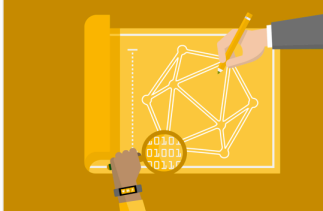
Master and Professional Courses



APPENDIX C:

PART III AI Model selection, coding, training and testing

- <https://gallery.azure.ai/models>
- <https://towardsdatascience.com/top-6-deep-learning-models-you-should-master-for-killer-ai-applications-13c7dfa68a3>

 <p>MODEL</p> <p>AlexNet 1.2</p> <p>AlexNet is a convolutional neural network for classification.</p>	 <p>MODEL</p> <p>ResNet-50 1.2</p> <p>ResNet-50 is a deep convolutional network for classification.</p>	 <p>MODEL</p> <p>ShuffleNet 1.2</p> <p>ShuffleNet is a deep convolutional network for classification.</p>	 <p>MODEL</p> <p>ZFNet 1.2</p> <p>ZFNet (aka VGG16) is a deep convolutional network for classification.</p>
 <p>MODEL</p> <p>Tiny YOLOv2</p> <p>This model is a real-time neural network for object detection that detects 20 different classes. It is made up of 9 convolutional layers and 6 max-pooling layers and is a smaller version of the more complex Full YOLOv2 network.</p>	 <p>MODEL</p> <p>AlexNet 1.2</p> <p>AlexNet is a convolutional neural network for classification.</p>	 <p>MODEL</p> <p>FER+ Emotion Recognition</p> <p>This model is a deep convolutional neural network for emotion recognition in faces</p>	 <p>MODEL</p> <p>MNIST - Handwritten Digit Recognition</p> <p>This model predicts handwritten digits using a convolutional neural network (CNN) using MNIST (Modified National Institute of Standards and Technology) dataset</p>

APPENDIX D:

PART IV Critical Reflection & Ethical Considerations

<https://cyber.harvard.edu/story/2019-06/introducing-principled-artificial-intelligence-project>

Introducing the Principled Artificial Intelligence Project

Jun 7, 2019

ETHICS AND GOVERNANCE OF AI

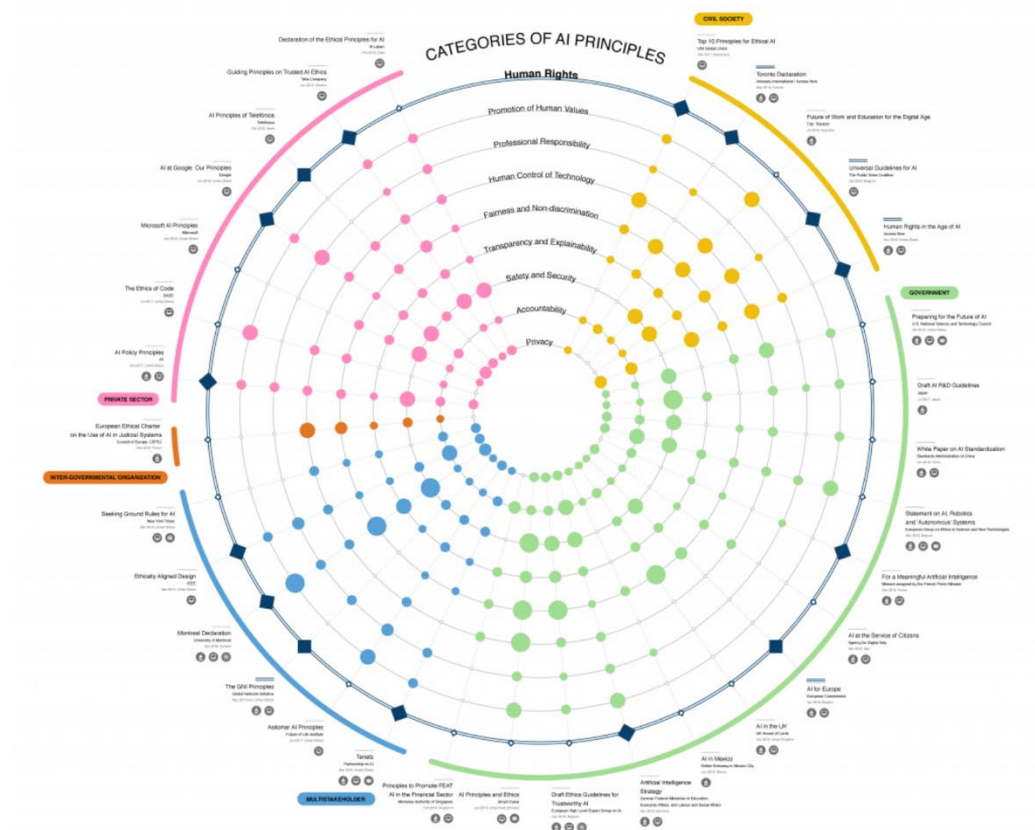


Hannah Hilligoss



Jessica Fjeld

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Berkman Klein's Cyberlaw Clinic launched the "Principles Artificial Intelligence Project" to map AI principles and guidelines. The team created a [data visualization](#) to summarize their findings, and will later publish the final data visualization, along with the dataset itself and a white paper detailing their assumptions, methodology and key findings.