

T - Technology

Dimension	<i>Technology</i>
Sub-dimension	<i>Performance of AI</i>
Indicator name	<i>T1: Performance of AI research</i>
Rationale	Performance levels for particular AI tasks are measured in terms of different evaluation metrics (accuracy, AUC, EM, F1, BLEU score, etc.) depending on the tasks at hand. Performance metrics may be used as a proxy indicator of progress.
Definition	In order to calculate the performance in each AI tasks (e.g., Image Classification, Face Recognition, Speech Recognition, Text Summarisation, etc.) we average the performance results (when common evaluation metrics are used) related to a particular task over a period of time.
Unit of measurement	Average results in the units required by the evaluation metric (e.g., percentage in [0,1] for accuracy-related metrics)
Geographical coverage	World
Geographical granularity	World
Breakdown	The indicator may be aggregated and summarised by AI tasks (e.g., Image Classification, Facial Recognition, Speech Recognition, etc.) or specific benchmark belonging to a particular task (e.g., Imagenet, COCO, CIFAR-10 for Image Classification). It is not possible to talk about "aggregated" progress as we are using different dimensions, data, goals, etc.
Data source(s)	Alcollaboratory (http://www.aicollaboratory.org/) See description of the dataset in indicator R3.
Reference date	2017-2020 (one value per year)
Known limitations	Not all the AI tasks can be evaluated for the whole period (2010-2020). Different AI tasks are evaluated using different evaluation metrics making it difficult to compare results among them.
References and Comments	References: Barredo, P., Hernandez-Orallo, J., Martínez-Plumed, F. and O Heigearthaigh, S., "The Scientometrics of AI Benchmarks: Unveiling the Underlying Mechanics of AI Research", 1st International Workshop on Evaluating Progress in Artificial Intelligence (EPAI 2020) @ ECAI 2020, Santiago de Compostela, Spain, September 4, 2020. http://dmip.webs.upv.es/EPAI2020/papers/EPAI_2020_paper_12.pdf Martínez-Plumed, F., Hernández-Orallo, J., Gómez, E., "Tracking AI: The Capability is (Not) Near", Proceedings of the 24th European Conference on Artificial Intelligence (ECAI 2020), Santiago de Compostela, Spain, September 2020. https://ecai2020.eu/papers/1009_paper.pdf