IfM MANAGEMENT TECHNOLOGY POLICY

UNIVERSITY OF CAMBRIDGE
Department of Engineering

Strategic **T**echnology and **I**nnovation **M**anagement Programme 2019

Early Stage Technology Strategic Decision Making using Deep Learning

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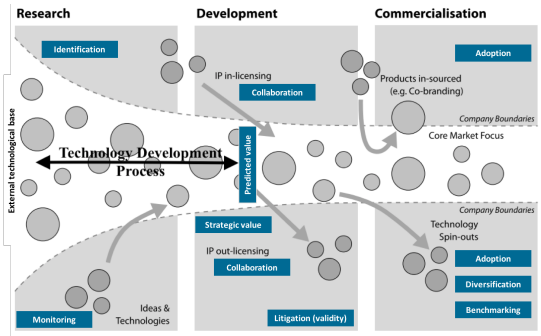
Info:

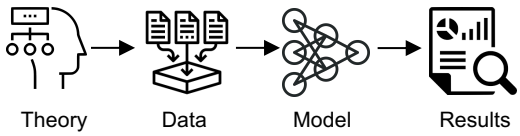
Big data is increasingly available in all areas of manufacturing and operations. In this research, we apply Artificial Intelligence technologies (deep learning) for predicting technological value.



Aims

To forecast the *technological value* of an *early stage technology*, modelled as a possible *patented invention,* using multiple patent indicators that are available after the related technology disclosure, at the early stage of the technology development process.

Methodology



Progress

- DL Models have been defined
- Random Search of parameters to optimize the models for all outputs
- Improve the results **(future work)**
- Case studies to evaluate the model in a firm environment **(future industrial engagement)**

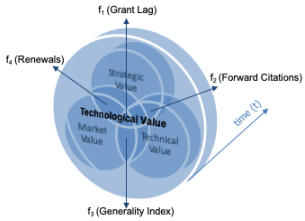
Deliverables

- Published papers, with the development of the AI optimized model

Results Summary

- It is possible to forecast the technological value of a patented invention, using multiple patent indicators
- **Latest model results (citation_t4): Accuracy: 81%, F-score: 42%**
- Effectiveness of tsne for clustering for the naïve doc2vec models (patent text)

- Technological Value (Concept): The *degree or associated value* realised from an *early stage technology*, based solely on the *technological information*



Published Papers

- Aristodemou, L., Tietze, F., Brintrup, A., & Deeble, S. (2019). Intellectual Property Analytics Decisions Support Tool (IPDST) for Early Stage Technology Decision Making https://doi.org/10.17863/CAM.35544
- Aristodemou, L., & Tietze, F. (2018). The state-of-the-art on Intellectual Property Analytics (IPA): A literature review on artificial intelligence, machine learning and deep learning methods for analysing intellectual property (IP) data. World Patent Information, 55 37-51 https://doi.org/10.1016/j.wpi.2018.07.002

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