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| Title | An automated materials and processes identification tool for material informatics using deep learning approach | | |
| Author(s) Name | Miah, M. S. U.; Sulaiman, J.; Sarwar, T. B.; Ibrahim, N.; Masuduzzaman, M.; and Jose, R. | | |
| Contact Email(s) | saef@aiub.edu | | |
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| Abstract |  |
| This article reports a tool that enables Materials Informatics, termed as MatRec, via a deep learning approach. The tool captures data, makes appropriate domain suggestions, extracts various entities such as materials and processes, and helps to establish entity-value relationships. This tool uses keyword extraction, a document similarity index to suggest relevant documents, and a deep learning approach employing Bi-LSTM for entity extraction. For example, materials and processes for electrical charge storage under an electric double layer capacitor (EDLC) mechanism are demonstrated herewith. A knowledge graph approach finds and visualizes different latent knowledge sets from the processed information. The MatRec received an F1 score of 9̃6% for entity extraction, 8̃3% for material-value relationship extraction, and 8̃7% for process-value relationship extraction, respectively. The proposed MatRec could be extended to solve material selection issues for various applications and could be an excellent tool for academia and industry. | |