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(54) Title: PROOF-OF-WORK FOR BLOCKCHAIN APPLICATIONS

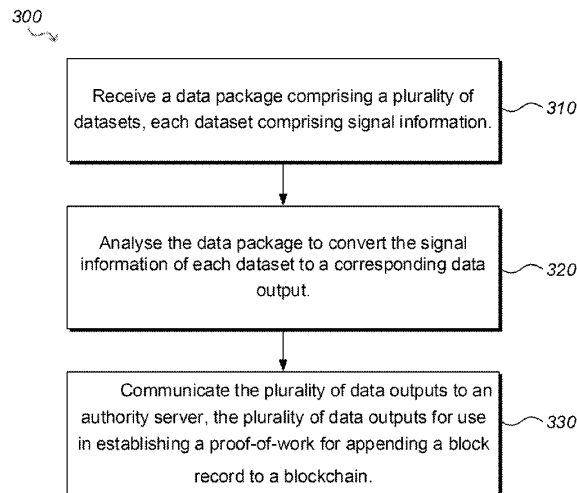


FIG. 3

(57) **Abstract:** Methods, computing apparatuses, computer readable media and systems are described that are for use with blockchain applications. An authority server may communicate a data package to a mining node. The mining node may receive the data package from the authority server, the data package comprising a plurality of datasets, each dataset comprising signal information. The mining node may analyse the data package to convert the signal information of each dataset to a corresponding data output. The mining node may communicate the plurality of data outputs to an authority server and, upon verification of the plurality of data outputs, the plurality of data outputs may be used in establishing a proof-of-work for appending a block record to a blockchain. Encryption and decryption methods may be used to secure data according to methods described herein. In some examples, the signal information of each dataset relates to a polynucleotide sequence and the corresponding data output relates to a read.

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