

Supporting Automated Health Insurance Claims Adjudication with Machine Learning Algorithms

Abstract for a case study presentation during HELINA 2019 in Gaborone

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Background and Purpose: The openIMIS Initiative was set up as a joint initiative by the Swiss and the German Development Cooperations to establish a community of users and developers around an Open Source software for the management of health financing schemes (openIMIS) and to provide for a seamless integration into the activities of related communities from the global digital health ecosystem such as the Open Health Information Exchange (OpenHIE) community. Currently being used to manage a variety of health insurance schemes in Nepal, Tanzania, Cameroon, Chad, and DRC, openIMIS offers seamless connections between beneficiaries, health service providers, and payers. Implemented as central claims management platforms, these systems currently rely on massive human interaction for the adjudication of health insurance claims. Machine learning algorithms promise to significantly improve the efficiency of adjudication workflows through an automated pre-qualification of claims for direct payment.

Methods: Through a co-creation process managed by the Digital Square platform, the openIMIS Initiative invites Global Good developers to elaborate ideas for integrating machine learning functionalities for claims adjudication into the openIMIS core. The design must enable local implementers and administrators of the system to define and train their adjudication module based on historical claims data from their own organisation. The module must document pre-qualification results in a human readable format. All claims that were detected as problematic must be manually reviewed to allow for a legally sound claims dispute while a certain percentage of automatically qualified claims needs to be reviewed manually to allow for routine estimations on the accuracy of the algorithm.

Results: It is expected that the automated pre-qualification of claims can greatly increase the performance of the claims adjudication process while at the same time reducing the overall cost by only requesting human interaction for peculiar cases. As a secondary effect the system shall provide a valuable research opportunity for local data scientists with a manageable complexity level.

Conclusions: The authors wish to trigger off a discussion in the audience to generate further ideas for suitable machine learning algorithms that are manageable in the context of African health financing ecosystem. Further

research on the effectiveness and sustainability of the plethora of available machine learning algorithms is needed in this context. Knowledge about powerful classification variables needs to be created as blueprint for locally adapted machine learning models and as a catalyst for local data science research and practice.