Optimising E-portfolios

through the means of xAPI and Entity Extraction of

Job Advertisements.

https://lakhackathon.files.wordpress.com/2018/02/lakhackathon2018_paper_1.pdf

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Setting the stage

(1) **Difficult to use:** Highly scalable e-portfolio systems exist including the open source systems such as Mahara (Gerbic & Maher, 2008), the next generation Open Portfolio System (Cambridge et al., 2008) and it's successor Karatu. However, studies have consistently reported a negative perception of learners to e-portfolios (Rahayu & Sensuse, 2015). Issues include the difficulty of use for students, teachers and mentors, the quality of mentorship and the stability and complexity of the underlying system.

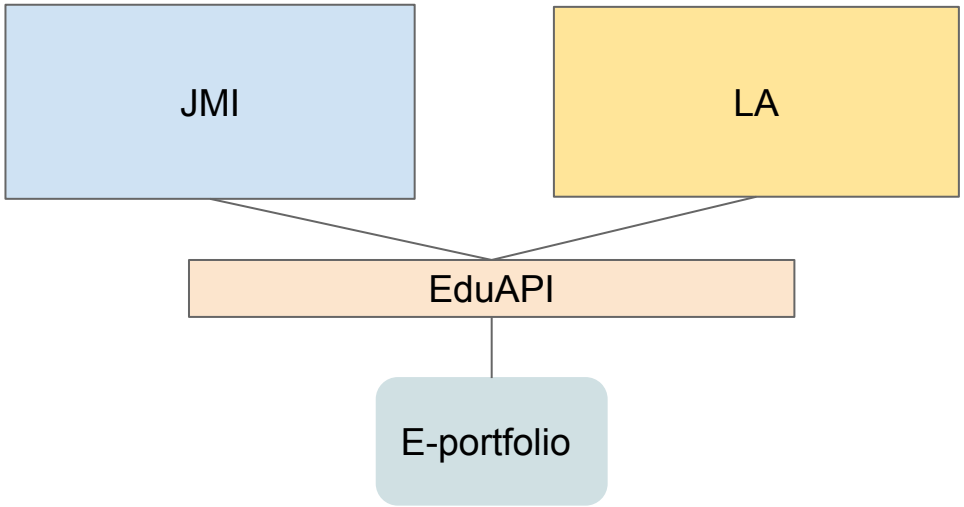
(2) **Standardisation:** E-portfolio's have a potential to intersect with Learning Analytics, for example, Aguiar et al. (2014) showed how to use the activity of learners in e-portfolios to significantly improve the prediction of student dropout. Enabling e-Portfolio's through the **xAPI protocol** is a means of standardising the capture of the student digital trace and through this means eases the comparison between predictive models across organisations and encapsulation of learning moments, etc.

Setting the stage: convergence of events

1. Emerging National infrastructure for LA backed off on xAPI
2. Emerging European infrastructure for Job Market Intelligence (CEDEFOP)
3. Novel data sources for combination together
4. Entity Extraction is a mature field of study
5. Recommendation systems are a mature field
6. Example dataset available
7. Real world issue to solve - Authentic tasks at the right educational level

You can already see the opportunity for infrastructure

Berg, A., Branka, J., & Kismihók, G. (2018). *Combining Learning Analytics with Job Market Intelligence to Support Learning at the Workplace*. *Digital Workplace Learning: Bridging Formal and Informal Learning with Digital*. Springer International Publishing.



Aspects of Job Market Intelligence

1. Trigger points caused by changes in time combined with other cost factors such as:
    a. Salary
    b. Educational level
    c. Volume
    d. Location
    e. Portfolio of skills (complexity of related tasks)
    f. LA related - Position relative to your ideal person, evolving curriculum, etc.
2. Data is dirty. Hopefully CEDEFOP will deliver a clean set
3. Regular expressions and frequencies might get you a long way
4. **Is doable, but needs to be done.**

References

Aguiar, E., Ambrose, G. A., Chawla, N. V., Goodrich, V., & Brockman, J. (2014). Engagement vs Performance: Using Electronic Portfolios to Predict First Semester Engineering Student Persistence. *Journal of Learning Analytics* , *1* (3), 7–33. https://doi.org/10.18608/jla.2014.13.3

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Research Questions

Dataset: **20,000** raw Job adverts donated by **Monsterboard**

RQ1: *What is the definition(s) of an **authentic task** in the context of e-portfolios?*
RQ2: *How do we apply machine learning techniques to the extraction of authentic tasks?*
RQ3: *How do we populate ~~**Karuta**~~ an open source e-portfolio system with authentic tasks?*
RQ4: *What are the definitions of **xAPI profiles** for Job Market Intelligence enriched e-portfolio systems?*
RQ5: *Which variables captured by xAPI profiles describe the most variance in predictive models for student success?*