

Digital Mentors

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There are strong predictors (e.g. IBM, Gartner) that disruptive innovation will happen at the intersection of the physical and digital worlds, leveraging new computational means that provide human-like or human-replacing capabilities intelligence. Smart coaches that utilise wearables and mobile devices to help people become aware of their everyday activities (quantified self) and take control of their lifestyle can lead to behaviour change in personal health, well-being, and green living. It is expected that smart coaches, i.e. *lifelong learning companions that advise, recommend, and track learning* will transform adult learning ¹.

Following these predictors, we will outline a possible domain for Human-Like Computing to address the long standing problem of developing reflexive practitioners by assisting people to make meaning from their work-based activities, develop confidence and self-esteem, and realise their full potential. Our vision is that this will be enabled with **digital mentors** - *a new generation of personal virtual assistants that emulate mentor-like behaviour*. A digital mentor is a smart device that senses its users emotions in real world activities (e.g. when interviewing a patient, meeting clients, taking decisions), recognises critical emotional moments, uses them as triggers for interactive contextualised nudges to aid the recall and interpretation of experiences, supports the user to discover connections between past experiences, and assists with setting personal goals. The digital mentors approach is applicable in learning (e.g. HE, apprenticeship, upskilling, NEETs), health (e.g. self-control for living with chronic diseases such as diabetes or arthritis), social inclusion (e.g. confidence, self-esteem, motivation).

UK is a world leader in intelligent learning environments and learning analytics; notable success is achieved with intelligent learning environments deployed in schools and universities (including EPSRC-ESRC funding). Professional and adult learning is alarmingly lagging behind. Digital mentors will fill this gap.

We expect that digital mentors will leverage knowledge-enriched intelligent means for data analysis and interaction planning to deliver contextualised nudges and recommendations. We will present opportunities and challenges from our recent interdisciplinary research on modelling interpersonal communication ², and computational means for interactive user modelling ³. We will outline open issues and research questions shaping a research programme on digital mentors.

¹ Luckin et al. *Intelligence Unleashed: An argument for AI in Education*, Pearson, 2016.

² Karanasios S; Thakker D; Lau LMS; Allen D; Dimitrova V; Norman A (2013) Making sense of digital traces: an activity theory driven ontological approach. *Journal of the American Society for Information Science and Technology*, 64 (12), pp. 2452-2467.

³ Dimitrova V; Brna P (2016) From Interactive Open Learner Modelling to Intelligent Mentoring: STyLE-OLM and Beyond. *International Journal of Artificial Intelligence in Education*, 26 (1), pp. 332-349.