Whatever happened to SenseCam?

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Almost twenty years ago, an influential paper titled "SenseCam: A Retrospective Memory Aid" [5] was presented at UbiComp. Developed at Microsoft Research, SenseCam was a simple-yet-innovative concept: a lightweight and unobtrusive camera, worn on a neck lanyard, that automatically captured images and other sensor data at regular intervals, generating a rich visual diary of the wearer's day. It was originally envisaged this could be inspected subsequently, either manually or automatically, to answer queries such as "where did I put my glasses?" But it quickly became apparent that the process of reviewing images frequently triggered true autobiographical remembering for the wearer, and the device captivated many researchers and practitioners in the memory community and beyond.

SenseCam quickly became an important tool in research, leading to more than 240 research publications [7] which themselves are cited over 10,000 times. The seminal SenseCam paper received the prestigious UbiComp 10-Year Impact Award [8], the device has been on display in the UK's national Science Museum for over a decade [2], and perhaps most significantly SenseCam led directly to two commercial products: the *Vicon Revue* [1] and the *OMG Life Autographer* [3].

Despite SenseCam's initial successes, momentum has since faded—and we are interested in exploring why! Many researchers still express excitement when talking about SenseCam and its positive impact on individuals with memory disorders [6], but adoption of wearable cameras for memory augmentation has been limited at best, and further research in this area has apparently slowed. The commercial descendents were ultimately discontinued after proving unviable [4]. Why did these products fail? Has the problem SenseCam seemed to address gone away? Has an alternative solution emerged? Or is a lack of available hardware the main problem? Are researchers and clinicians in the field still keen to use SenseCam-like devices?

In order to try and answer these questions, we talked to some of the experts who worked with SenseCam in the past. In doing so we found that many of the original challenges which SenseCam aimed to address remain unresolved. Despite advances in wearable and mobile technologies, there are currently no commercially-available devices that replicate the specific functionality or results demonstrated by SenseCam, particularly in supporting individuals with memory impairments. Smartphones and action cameras have become widespread, but are often unsuitable replacements due to challenges such as size, storage capacity, form factor and/or running time between charges. Furthermore, they typically rely on active user input and do not provide the same continuous, automatic logging that characterised SenseCam. As a result, for today's patients with memory impairments, there is no direct alternative that offers the same kind of passive, first-person visual record shown to support memory recall and reflection. Ironically, it seems as if the field dedicated to studying memory may have forgotten one of its most promising tools.

So could a system such as SenseCam succeed as an intuitive, powerful and widely-adopted technology in this day and age? Realising this would require more than reproducing the original hardware; it would involve addressing issues such as privacy and user acceptance, as well as considerations as to whether a device like this should be considered a medical aid, a lifestyle tool, or something else entirely. In this talk, we revisit the legacy of SenseCam, reflect on the insights it offered, summarise the challenges that remain, and speculate on what might be needed to reimagine this kind of technology in today's world.

Figure 1: SenseCam

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