Intelligent Sticky Notes that can be Searched, Located and can Send Reminders and Messages

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ABSTRACT

We present 'Quickies: Intelligent Sticky Notes', an attempt to bring one of the most useful inventions of the 20th century into the digital age: the ubiquitous sticky notes. Sticky notes help us manage our to-do lists, tag our objects and documents and capture short reminders or information that we may need in the near future. 'Quickies' enrich the experience of using sticky notes by allowing them to be tracked and managed more effectively. Quickies are stickies that have intelligence and the ability to remind us about the task we ought to perform or to provide us at the right time with the information we captured in the past. The project explores how the use of Artificial Intelligence, RFID, and ink recognition technologies can make it possible to create intelligent sticky notes that can be searched, located, can send reminders and messages, and more broadly, can help us to seamlessly connect our physical and digital experiences.

Author Keywords

Post-it notes, connecting the physical and information world, handwriting recognition, RFID.

ACM Classification Keywords

H5.2 **[Information interfaces and presentation]**: Input devices and strategies; Interaction styles; Natural language; Graphical user interfaces.

QUICKIES - INTELLIGENT STICKY NOTES

What are Quickies?

Quickies are sticky notes (a.k.a. Post-its [1]) that offer portability, connectivity to the digital information world, smart information organization, ability to be findable (searchable as well as locatable) and ability to send
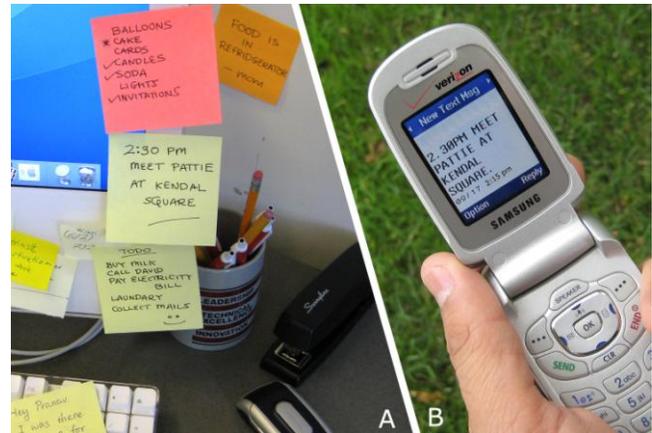
Figure 1. (A) Sticky notes at user's desk (B) Example of a reminder sent to user's mobile phone.

reminders and messages. The following paragraphs present some usage scenarios and examples that demonstrate how 'Quickies' can benefit users.

- Imagine you scribbled a sticky note about an upcoming meeting with a work-colleague; you placed the note on your desktop. Unfortunately, you have overlooked the note, completely forgetting about the meeting and went for lunch with a friend; however your intelligent sticky note reminds you about your meeting appointment via a friendly text message on your mobile phone (Figure 1.)

- You write down a person's name and phone number on a sticky note while talking on the phone. That new contact is automatically entered in your computer address book.

- You create a grocery list or To-Dos on a paper sticky note. This list is automatically synchronized with the task-lists in your mobile phone and computer. Now, your mobile phone has a list of the things you noted down to buy, which comes handy when you are at the grocery store.

- Your mom prefers using physical media rather than mobile phones and computers. She leaves a message for you on a sticky note when leaving for the market. You receive her message as an SMS.

- You use a sticky note to bookmark a section about the 'Platypus Paradox' in Peter Morville's 'Ambient

Findability' book. Several weeks later, a discussion about the 'Platypus Paradox' arises and you remember bookmarking Morville's explanation. You can now use Quickies' graphical interface to search for the keywords 'Platypus Paradox'. As the system is keeping track of all your notes in digital form, it shows all the relevant notes you have created in past. The system also helps you locate that note (and so forth the book) in your house.

We studied the usage of regular sticky notes by people and have identified some recurring cases of notes. Some of the most common cases we recognize are:

- To-do lists
- Reminders of a meeting or an appointment
- Contact Information
- Messages/notes to another person
- Labels/tags on objects and documents

We built a fully working prototype of 'Quickies' that recognizes these various types of notes and performs relevant actions for those cases, thereby providing a seamless integration of paper and electronic world.

How do Quickies work?

Figure 2 presents an explanation of how Quickies work. Physical sticky notes are captured and stored into a computer using commercially available digital-pen hardware, which captures the movement of the pen on the surface of a paper sticky note. A software program stores the hand-written notes as images/strokes and converts the stored hand-written notes into computer-understandable text using commercially available handwriting recognition algorithms. As shown in Figure 3, the system provides a graphical interface to browse or search all of the user's
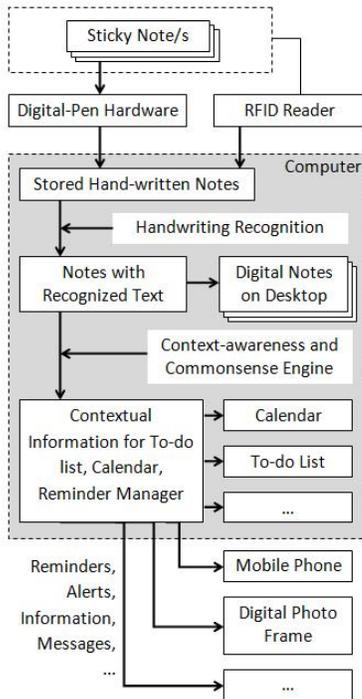

Figure 2. System design of 'Quickies'.

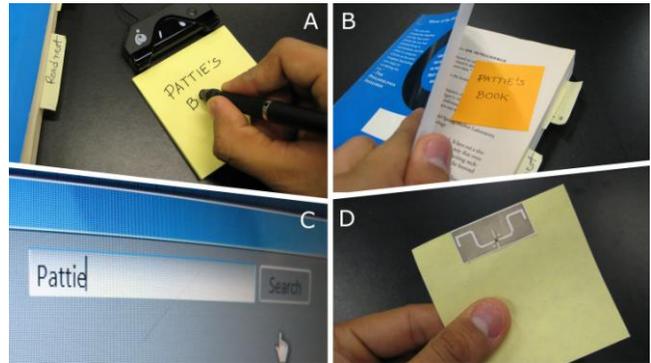**Figure 3. Graphical user interface of the 'Quickies'.**

Figure 4. (A) User writes on a sticky note (B) User tags a book with the note (C) User searches notes related to the word 'Pattie'. (D) A sticky note with the RFID tag on back.

notes. The recognized text is processed using a commonsense knowledge engine that uses ConceptNet [2] and computational AI techniques. This process provides the note database with contextually rich information and helps the system in categorizing the notes. The system uses its understanding of the user's intentions, content and the context of the notes to provide the user with reminders, alerts, messages and just-in-time information. In addition, at the back of each of the Quickies is a unique RFID tag, which makes it possible to locate Quickies in the house or office. Figure 4 presents a graphical scenario of this feature.

CONCLUSIONS

The Quickies system bridges the gap between the physical and digital worlds, linking hand-written sticky-notes to the mobile phone, digital calendars, task-lists, e-mail and messaging clients. By augmenting the familiar and ubiquitous physical sticky-note, the system leverages existing patterns of behavior, merging paper-based sticky-note usage with a user's informational experience.

REFERENCES

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