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# Ritchie the DeskBuddy

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## Abstract

TODO

## Author Keywords

Authors' choice; of terms; separated; by semicolons; include commas, within terms only; required.

## ACM Classification Keywords

H.5.m [Information interfaces and presentation (e.g., HCI)]: Miscellaneous; See [<http://acm.org/about/class/1998/>]: for full list of ACM classifiers. This section is required.

## Introduction

There are a wide variety of resources available to people to keep track of events and activities, remind them about these, and to make them more productive. Two approaches are commonly used: 1. using physical reminders such as post-it notes and diaries. The drawback here is that the user is physically constrained. For example if the user has post-it notes at home, these notes aren't accessible when she is in the library; and 2. using software reminders, such as Google Keep and Google Calendar. Although they are available to use for free, these are easy to ignore as they only exist virtually (only provide simple notifications) and are not reflected sufficiently enough in the physical world.

This project attempts a new approach to this application.

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What if it were possible for a physical object in a user's space that could draw attention and spark user reaction in a more effective manner? What if there could be an object that can play the role of a friend that reminds a person about the occurrence of an event? Wouldn't it be great if someone were to tell you to stop what you were doing and keep up with your new year resolution of running 5K every-day? Graphical User Interfaces, by their nature, do not create an emotional bond with a user in most interfaces. Having an emotional bond with an object can greatly enhance user experience with that particular object, irrespective of the simplicity of its purpose.

Ritchie the DeskBuddy is just the device for the role. Ritchie is a 3D printed robotic tiger that sits on a user's desk and reminds them of events or activities that need to be done. As an internet-connected device, Ritchie can be of great utility when provided with pertinent data sources. To be clear, Ritchie is not an AI robot. It cannot tell you what you need to do, or tell you about the weather. Nor can it specifically remind you to buy some eggs on your way back home. What Ritchie can do is wave its arms and move around to get your attention about something important. The rest is upto the user to check on the topic of concern. The events can range anything from small everyday events to more important things that demand immediate action.

### Related Work

Peek et. al [5] describe *Hangster*, an ambient display that embodies virtual interactions using physical devices hanging on strings. These devices are designed to look like personalized avatars. *Hangster* allows a person to see their friend's status (online/offline) on a messaging application (by lowering/raising the avatar), and allow some simple interactions - e.g. initiate a conversation by gently tugging on

the avatar string, show notifications by moving. *Dino*<sup>1</sup> is an ambient display that controls a physical object to react to the nature of conversations on a chat application. By studying the content of the conversation, the 'egg' moves to show whether it is happy, sad, angry or calm. Similarly, *Availabot*<sup>2</sup> is a computer-controlled push puppet that stands or falls down to reflect a friend's availability (online/offline status) on a chat application.

Jafarinaiimi et. al [3] describe *Breakaway*, an ambient display that attempts to encourage people who sit for long periods to take more frequent breaks. This is implemented using a shape-changing artistic sculpture object. User's position and posture is tracked using various sensors. Shape and movement of the device reflects the user's pose - upright when the user takes a break, and slouching when the person has been sitting for extended periods. Similar to *Breakaway*, *MoveLamp* [1] keeps track of a person's physical activity at the workplace and attempts to encourage physical activity when a person has been sitting for long periods. This made use of a pedometer application on a smartphone, in combination with software on a computer to control an ambient lamp that changed color from green to red to make the user aware that they need to move. Rogers et. al [6] investigated whether ambient displays can be used to influence behavioral changes among people. In this study, they installed twinkly lights in the carpets to unconsciously guide people to take the stairs. A large ambient display in the common area was used to visualize the number of people using the stairs vs. those that chose to use the elevator. While each of these were implemented differently, they shared a common goal of nudging a user towards an action and observing common behavioral changes over extended periods of time.

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<sup>1</sup>Dino - Ambient Display Creature: <https://www.youtube.com/watch?v=AvST9wjrkC4>

<sup>2</sup>Availabot: <https://www.youtube.com/watch?v=w0voYnEjFcQ>

In *Tangible Bits* [2], Hiroshi Ishii proposes the concept of coupling the digital world (bits of information) into a physical object, thereby making it 'tangible'. In line with this concept, Ritchie The DeskBuddy would be a Tangible Bit, where the object would mirror digital information and events, acting as a 'phicon', or a physical icon. *ReaDIYmate*<sup>3</sup> is a commercially available DIY (Do-It-Yourself) kit for building internet-connected paper objects that react to events in the digital world. Similarly, few other devices exist that physically react to digital events and interactions - *Olly*<sup>4</sup> is a device that releases a scent for certain digital events/interactions. Similarly, *Polly*<sup>5</sup> is a device that releases a ball of candy for certain digital events/interactions.

Besides the above mentioned research and projects, there is sufficient work in the area of 3D printed robots and robot parts[4, 7]<sup>6,7</sup>, as well as numerous resources for accessing 3D models of robots and parts for 3D printing.

## Project Description

Ritchie The DeskBuddy is a 3D printed robotic tiger that sits on a user's desk and reminds them of events or activities that need to be done.

### *Implementation details*

#### *Presented information*

The device would reflect reminders, events and tasks relevant to a user. The same concept can be used to developing and practicing some new habits as well, e.g. read-

ing one chapter of a book everyday, running 5K, practice sketching etc.

### *Data source*

For this project, Google Calendar<sup>8</sup> will be used as the data source, as it is already widely used by many users as an application for recording activities and keeping track of events.

### *Device abilities*

The 3D printed robot will be able to do the following:

- Perform a waving action (arm movement);
- Move on a flat surface (walk/drive);
- Play certain sounds for certain events;
- Blink lights to attract attention.

### *Mapping of information to visualization*

TODO

### *Components*

- Particle Photon
- 1200mAh Lithium battery
- Photon battery shield
- Continuous Rotation Micro Servo (x1)
- 180deg rotation Micro Servo (x1)
- Accelerometer
- Piezoelectric speaker
- LEDs

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<sup>3</sup>ReaDIYmate: <http://readiymate.com/>

<sup>4</sup>Olly: <http://www.ollyfactory.com/>

<sup>5</sup>Polly project: <http://www.ollyfactory.com/polly/>

<sup>6</sup>Instructables page: "GearBot: A Dual-speed, Gear-driven robot":  
<http://www.instructables.com/id/GearBot-A-Dual-Speed-Gear-Driven-Bot/?ALLSTEPS>

<sup>7</sup>Cubify - Commercial 3D printed parts for custom designed robots:  
<http://cubify.com/store/mrn>

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<sup>8</sup>Google Calendar API: <https://developers.google.com/google-apps/calendar/>

## Project Milestones

TODO

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