SESSION 4

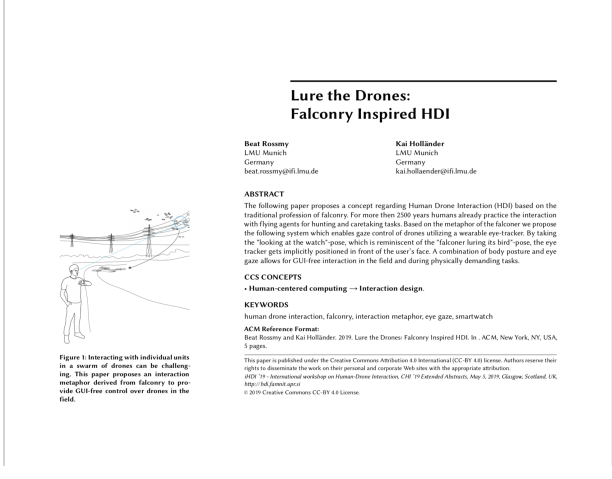
User Experience Design I - SoSe 2019

3 Minute Pitches!

Let's share our current status of the projects.

Prepare until 11:25 a 3 minute presentation of your concept and show images of the paper prototype and your implementation of the folding gesture.

Extended Abstract Template



Lure the Drones:
Falconry Inspired HDI

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ABSTRACT

The following paper proposes a concept regarding Human Drone Interaction (HDI) based on the traditional profession of falconry. For more then 2500 years humans already practice the interaction with flying agents for hunting and caretaking tasks. Based on the metaphor of the falconer we propose the following system which enables gaze control of drones utilizing a wearable eye-tracker. By taking the "looking at the watch"-pose, which is reminiscent of the "falconer luring its bird"-pose, the eye tracker gets implicitly positioned in front of the user's face. A combination of body posture and eye gaze allows for GUI-free interaction in the field and during physically demanding tasks.

CCS CONCEPTS

• **Human-centered computing** → **Interaction design**.

KEYWORDS

human drone interaction, falconry, interaction metaphor, eye gaze, smartwatch

ACM Reference Format:
Beat Rossmy and Kai Holländer. 2019. Lure the Drones: Falconry Inspired HDI. In . ACM, New York, NY, USA, 5 pages.

iHDI '19 - International workshop on Human-Drone Interaction, CHI '19 Extended Abstracts, May 5, 2019, Glasgow, Scotland, UK, http://hdi.famnit.upr.si

Figure 1: Interacting with individual units in a swarm of drones can be challenging. This paper proposes an interaction metaphor derived from falconry to provide GUI-free control over drones in the field.

Figure 2: Trained birds have been an important element of hunting for many centuries. This craft originated from China and spread all over the world and various cultural contexts. In addition to the practical character of the bird, it also functions as a status symbol representing the power and influence of the owner. | Joseph Strutt "The sports and pastimes of the people of England from the earliest period" (1801). wikimedia.org

TIMELINE

680 BC: First records for falconry in China.
200-400 AC: Goths learned falconry.
500 AC: Roman mosaic pictures falconry.
700 AC: Falconry established in Arabia.
2010: Falconry accepted as Intangible Cultural Heritage of Humanity by the UNESCO.

INTRODUCTION

In the near future mobile agents or drones could be a substantial aspect of many jobs and everyday tasks. From supervising swarms performing maintaining tasks or coordinating agents in inaccessible territories or dangerous situations drones will broaden the capabilities of such professions and lead to safer and more effective work conditions. When looking back in time, one can see parallels to an ancient profession that also widened capabilities by taking advantage of mobile agents. Hunters and caretakers used trained birds to assist their tasks (see Figure 2). This craft is called falconry and is still used today for hunting purposes but also for keeping public spaces free of vermin and thus pollution or to frighten away swarms of birds from airports to prevent collisions with planes. In this paper the authors propose a HDI concept that builds upon this traditional way of interacting with mobile agents. Furthermore, scenarios are described in which such new interaction techniques could turn out to be beneficial compared to established GUIs.

RELATED WORK

Human Drone Interaction is an expanding field of research in the Human Computer Interaction (HCI) community. Many projects investigate intuitive ways of interacting with drones. Cauchard et al. [3] already explored natural interaction with drones based on gestures participants performed intuitively. Their findings show that a lot of persons automatically tend to interact with drones similarly as they would do with pets or humans using e.g. gestures for beckoning.

In addition, other research projects explored how to use gaze [5] as a potential input technique for the interaction with drones. Yu et al. [8] implemented a system that allows for direct remote control of a drone via gaze input. Gaze in this project was used to control the movement comparable to a remote control allowing for the manipulation of the absolute position (move: right, left, up, down) and not to send to specific locations (go to: desk, door, wall, ...). In contrast, Alapetite et al. [1] implemented a system that uses gaze to control a drone from 1st person perspective using point of regard on a screen that pictured the drone's live stream.

A comprehensive overview of the current state of HDI techniques such as gestures, gaze direction and speech is given by Peshkova et al. [7]. Also the combination of input techniques such as gestures and speech with GUIs was already explored by Fernández et al. [4] in the context of in indoor scenarios.

Falconry inspired interaction? [6]

INTERACTION METAPHOR

The falconer recalls its bird by using the lure and offering the bird its arm for landing. The lure is typically consisting of feathers as well as bird food and is used during the trainings-process to condition and later to trigger the bird by a motion pattern to return or signaling when to return to its

http://chi2019.acm.org/authors/chi-proceedings-format/

Homework

Use the CHI 2019 Extended Abstract template to document your idea (4 pages).

Include the following sections:

- **Abstract:** What is the core idea and motivation? (max 300 words)
- **Introduction:** What is the motivation and current state of the art?
- **Concept:** What is your idea? What is the mental model you are building on? What are the central aspects of the intraction? (use figures to illustrate)
- **Conclusion & Future Work:** What are the next steps? What are imlpications of this new technology?