

SNail: Sensing the Strains From Fingernail As Always-Available Input

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ABSTRACT

We present SNail, a nail-mounted device that sense user's fingernail contour and bend when force is applied on a surface. By using 3×3 array of 0.2mm strain gauges, SNail is small enough to fit within fingernail, and it is flexible and stretchable. Since the device is always available, it enables user to intuitively use smart TV/devices by simply performing gestures on surfaces around without touching devices. We evaluate this interface in motionless and motion mode. The system can achieve 90% accuracy for classifying with different kinds of finger posture angle, levels of pressure in motionless mode. For motion mode, it can distinguish directions of movement with high accuracy(>95%). We also show applications of using SNail, which lower the effort for ???.

Author Keywords

Natural User Interface (NUI); Wearable electronics; fingernail; Strain gauges;

ACM Classification Keywords

H.5.m. Information Interfaces and Presentation (e.g. HCI): Input devices and strategies (e.g., mouse, touchscreen)

INTRODUCTION

RELATED WORK

HARDWARE DESIGN

Sensing Touch Angle

Sensing Force Level

Sensing Movement

PROTOTYPE DESIGN

Hardware

Software

SYSTEM EVALUATION

Experienc

Participants

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Participants

Apparatus

Procedure

Design

Results

USER STUDY TWO

Participants

Apparatus

Procedure

Design

Results

INTERACTION DESIGN SPACE

DISCUSSION AND FUTURE WORK

CONCLUSION

REFERENCES