# Open Sesame: Moving beyond frustration in security usability

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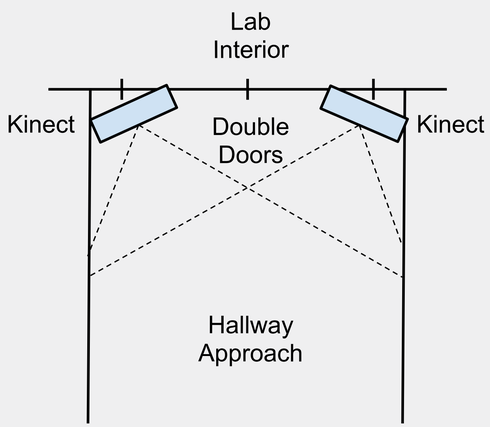
## Introduction

Current identification and authentication practices mediated by computers are often burdensome to use. Security usability researchers to date mainly frame this issue only in terms of minimizing frustration with these seemingly unavoidable burdens. Traditionally, usability and security are seen to be in conflict.

Our aim is to reframe the topic of usable security through maximizing pleasurable user experiences. We posit that pleasurable interactions will increase adoption and participation in security systems, maximizing their efficacy. We also hypothesize that pleasurable interactions of the sort envisioned will improve biometric recognition. Further still we expect to see social effects to develop around pleasurable security systems that are entirely absent at present.

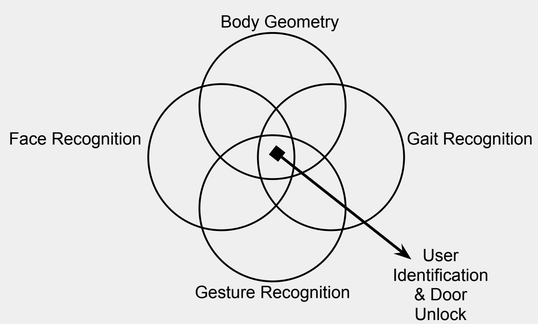



## Materials & Methods

We have designed a system incorporating two Microsoft Kinect depth sensing cameras to study user engagement with a pleasurable security system. We call it Open Sesame.

Open Sesame combines two promising areas of technological innovation — behavioral biometrics and movement sensing — to create a secure doorway entry mechanism that is pleasurable and engaging to use in and of itself. The system will identify users at a distance and with a unique gesture allow them to unlock the door of the Game Innovation Lab at NYU•Poly.

Data from the two Kinect devices will be processed to yield multiple biometrically significant matching results to identify and authorize a user. A variety of user testing scenarios measuring preference and affective response with and without the system will establish its efficacy.




## Progress & Results

Open Sesame is in its early stages:

- Conducted thorough literature review.
- Determined basic feasibility.
- Established relationship with Microsoft Research for Kinect development.
- Submitted proposal for an NSF Human-Centered Computing grant.
- Run preliminary studies with a system mockup, affective instruments, and video analysis.
- Core development in summer of 2012.

Early study results suggest that users find the system uniquely empowering and engaging. Potential users have even expressed their interest to gesture in terms of favorite science fiction, fantasy literature, and comic book characters.

## References

A. Adams and M. A. Sasse. Users are not the enemy: why users compromise security mechanisms and how to take remedial measures. Communicaitons of the ACM 42(12), 40-46, 1999.

Bauer, L., Cranor, L. F., Reiter, M. K., and Vaniea, K. Lessons Learned from the Deployment of a Smartphone-Based Access-Control System. Technical Report CMUCyLab-06-016, CyLab, Carnegie Mellon University, October 2006.

Bødker, S. When second wave HCI meets third wave challenges. In Proc. of NordiCHI '06, ACM Press, 1-8, 2006.

N. V. Boulgouris, D. Hatzinakos and K. N. Plataniotis. Gait recognition: A challenging signal processing technology for biometrics. IEEE Signal Process. Magazine, vol. 22, p.78 , 2005.

C. Braz and J. Robert. Security and usability: The case of the user authentication methods. In IHM '06: Proceedings of the 18th International Conference on Association Francophone d'Interaction Homme-Machine, pages 199–203, 2006.

P. Cattin, Biometric Authentication System Using Human Gait, Ph.D. thesis, ETH-Zurich, Institute of Robotics, 2002.

Dourish, P., Grinter, B., Delgado de la Flor, J., Joseph, M.: Security in the wild: user strategies for managing security as an everyday, practical problem. Personal and Ubiquitous Computing, 8 (6) 391-401, 2004.

A. K. Jain, A. Ross, and S. Pankanti. Biometrics: a tool for information security. IEEE Transactions on Information Forensics and Security, vol. 1, no. 2, pp. 125–143, 2006.

P.W. Jordan, Human factors for pleasure in product use. Applied Ergonomics, 29 1, 25–33, 1998.

J. Kittler, M. Hatef, R.P.W. Duin, and J. Matas. On combining classifiers. IEEE Trans. Pattern Anal. Machine Intell., vol. 20, no. 3, pp. 226–239, Mar. 1998.

Theofanos, M.F.; Micheals, R.J.; Stanton, B.C. Biometrics Systems Include Users. IEEE Systems Journal, volume 3, issue 4, pages 461-468, 2009.

West, Ryan. The Psychology of Security: Why Do Good Users Make Bad Decisions? Communications of the ACM, 51(4):34–40, April 2008.

Fu Xiao, Peng Hua, Liu Jin, Zhang Bin. Human gait recognition based on skeletons. Educational and Information Technology (ICEIT), 2010 International Conference on, On page(s): V2-83 - V2-87, Volume: 2, 17-19 Sept. 2010.

Yee, K.-P. Guidelines and Strategies for Secure Interaction Design. in Cranor, L.F. and Garfinkle, S. eds. Security and Usability: Designing Secure Systems That People Can Use, O'Reilly, Sebastopol, CA, 247-274, 2005.