

# David T Naylor

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## EDUCATION

**Carnegie Mellon University**, Pittsburgh, PA

Ph.D., Computer Science, *2011 – present*

- Advisor: Peter Steenkiste

**The University of Iowa**, Iowa City, IA

B.S., Computer Science, *2007 – 2011*

B.S., Mathematics, *2007 – 2011*

- Graduated with Highest Distinction
- Graduated from the Honors Program

## RESEARCH INTERESTS

computer networks, network architecture, network security, privacy

## RESEARCH PROJECTS

**Living in an Encrypted World**, Telefónica Research

*Spring 2014–present*

My current work explores privacy/security vs. performance/functionality tradeoff presented by encryption, particularly in the context of the Web. The standardization of HTTP 2.0 is just around the corner, and all signs point to the use of TLS becoming mandatory. This work (1) attempts to quantify the *cost* of HTTPS-by-default and (2) explores mechanisms for re-introducing beneficial in-network functionality to secure connections.

**Balancing Accountability and Privacy**, Carnegie Mellon University

*Fall 2013–present*

This work considers how changes to the network architecture can help strike a balance in the tussle between accountability (i.e., knowing who sends each packet) and privacy (i.e., hiding who sends each packet). We do this by splitting today’s overloaded source address into two fields: an *accountability address* and a *return address*.

**eXpressive Internet Architecture (XIA)**, Carnegie Mellon University

*Fall 2011–present*

XIA, one of five future Internet architecture projects funded by the NSF, is a clean-slate redesign of the Internet aiming to (1) make the Internet *evolvable*—good ideas in the future shouldn’t require a “flag day” upgrade, (2) support an extensible set of communication paradigms (like content- or service-centric communication) that align with what applications actually want to do, and (3) provide “intrinsic” security at the network layer.

**Computational Epidemiology Group**, University of Iowa

*Spring 2009–Summer 2011*

I studied the spread of disease and outbreak prevention; in particular, I did this in a hospital setting by using wireless sensor networks to examine social networks among healthcare workers and to monitor hand hygiene compliance. I used this data to drive outbreak simulations.

RELEVANT WORK EXPERIENCE	<p><b>Virtual Reality Applications Center</b>, Iowa State University  <i>Summer 2008, Summer 2009, Winter 2009</i></p> <p>I worked on a team at ISU’s world-famous virtual reality center developing Meta!Blast, an interactive 3D computer game designed to enhance cell biology education in high schools. One of my projects was developing the game’s character animation library.</p>
AWARDS	<p><b>American Society for Engineering Education</b></p> <ul style="list-style-type: none"> <li>• National Defense Science and Engineering Graduate Fellowship, <i>2012 – 2015</i></li> </ul> <p><b>The University of Iowa</b></p> <ul style="list-style-type: none"> <li>• Sanxay Prize for Graduate Study, 2011</li> <li>• Interdisciplinary Health Group Student Poster Session Award, 2011</li> <li>• John Deere Scholarship in Computer Science, <i>2010</i></li> <li>• Arthur Collins Scholarship in Computer Science, <i>2008, 2009</i></li> <li>• Dewey B. Stuit Honors Scholarship, <i>2009</i></li> <li>• Rhodes Dunlap Honors Scholarship, <i>2008, 2009, 2010</i></li> <li>• William and Effa McMeans Scholarship, <i>2007 – 2011</i></li> <li>• Old Gold Scholarship, <i>2007 – 2011</i></li> <li>• National Merit Scholar, <i>2007 – 2011</i></li> </ul>
PUBLICATIONS	<p>[1] <b>Naylor, D.</b>, A. Finamore, I. Leontiadis, Y. Grunenberger, M. Mellia, M. Munafò, K. Papagiannaki, P. Steenkiste. The Cost of the “S” in HTTPS. <i>CoNEXT 2014</i>, December 2014. (<i>Short Paper</i>)</p> <p>[2] <b>Naylor, D.</b>, M.K. Mukerjee, P. Steenkiste. Balancing Accountability and Privacy in the Network. <i>SIGCOMM 2014</i>, August 2014. (<b>Best Paper Award</b>)</p> <p>[3] <b>Naylor, D.</b>, M.K. Mukerjee, P. Agyapong, R. Grandl, R. Kang, M. Machado, S. Brown, C. Doucette, H.C. Hsiao, D. Han, T. Kim, H. Lim, C. Ovon, D. Zhou, S.B. Lee, Y.H. Lin, C. Stuart, D. Barrett, A. Akella, D. Andersen, J. Byers, L. Dabbish, M. Kaminsky, S. Kiesler, J. Peha, A. Perrig, S. Seshan, M. Sirbu, P. Steenkiste. XIA: Architecting a More Trustworthy and Evolvable Internet. <i>SIGCOMM CCR</i>, July 2014.</p> <p>[4] Hornbeck, T., <b>D. Naylor</b>, A.M. Segre, G. Thomas, T. Herman, and P.M. Polgreen (2011). On Hand Hygiene Compliance and Diminishing Marginal Returns: An Empirically-Driven Agent-Based Simulation Study. <i>The Computational Social Science Society of the Americas Annual Conference</i>.</p> <p>[5] Thomas, G., P. Polgreen, T. Herman, D. Sharma, B. Johns, H. Chen, G. Scranton, <b>D. Naylor</b>, M. Ireland, T. McCarty, T. Decker, A. Segre (2011). Improving Patient Safety With Hand Hygiene Compliance Monitoring. <i>Proceedings of the Human Factors and Ergonomics Society Annual Meeting</i>, 55(1):823–827.</p>
POSTERS, TALKS, AND DEMOS	<p>[6] Mukerjee, M.K., J. Hong, J. Jiang, <b>D. Naylor</b>, D. Han, S. Seshan, H. Zhang. Enabling Near Real-time Central Control for Live Video Delivery in CDNs. <i>SIGCOMM 2014</i>, August 2014. (<i>Poster</i>)</p> <p>[7] Grandl, R., D. Han, S.B. Lee, H. Lim, M. Machado, M.K. Mukerjee, <b>D. Naylor</b>. Supporting Network Evolution and Incremental Deployability with XIA. <i>SIGCOMM 2012</i>, August 2012. (<i>Demo</i>)</p> <p>[8] <b>Naylor, D.</b>, M.K. Mukerjee, P. Steenkiste. eXpressive Internet Architecture: GEC15 Demo. <i>GENI Engineering Conference 15</i>, October 2012. (<i>Talk/Demo</i>)</p>

