

Chris GauthierDickey

1 General Information

1.1 Personal

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1.2 Brief Biography

Chris GauthierDickey is currently an Assistant Professor in the Department of Computer Science at the University of Denver. He received his PhD in Computer Science from the University of Oregon, where he was supported by a National Science Foundation Graduate Research Fellowship. His dissertation was on large-scale and cheat-proof event ordering for multiplayer games and he continues to research in networks, security, and games.

1.3 Education

2001 B.S. Computer Science, University of Oregon
2006 Ph.D. Computer Science, University of Oregon

1.4 Honors

2002–2005 National Science Foundation Graduate Research Fellow

1.5 Employment

Assistant Professor, University of Denver, 2006–present.
Graduate Research Fellow, University of Oregon, 2001–2006.
Programmer, Sax Software, Eugene, Oregon, 1998–2000.
Network Administrator, Cegelec ESCA, Seattle, Washington, 1995–1998.

1.6 Professional Associations

Chris GauthierDickey is a member of the ACM, IEEE, the Colorado Research Institute for Security and Privacy (CRISP), Colorado Interactive Gaming and Simulation Alliance, and the International Game Developer's Association.

1.7 Software Projects

Chris GauthierDickey is an author and maintainer of two software packages: 1) the GNU project libmicrohttpd: a tiny web server library co-authored by Dr. Christian Grothoff and that was developed in the Networking class he teaches at DU, and 2) the DUP system, which is a multi-stream pipeline package that includes a mini-language for writing distributed and parallel streaming applications using multi-stream pipelines. DUP was developed in conjunction with Dr. Christian Grothoff, Dr. Matthew Rutherford, and several graduate students.

2 Research

2.1 Research Summary

Chris GauthierDickey's research is generally focused around networking, security and games. His dissertation was on designing and proving that cheat-proof event-ordering for large-scale multiplayer games was possible, allowing future researchers and game developers to have the tools necessary for building large-scale distributed games.

At the University of Denver, his research has continued in building large-scale, distributed multiplayer games and applying this work towards other areas. With his student Gabor Papp, GauthierDickey has investigated scalable, peer-to-peer multiparty voice communications while on the other hand with his student Daniel Pittman, they are investigating peer-to-peer and cheat-proof computations.

In terms of pure networking research, Chris GauthierDickey has collaborated with Dr. Christian Grothoff in developing a technique for peer-to-peer bootstrapping, which is the problem of locating a peer-to-peer network on the Internet when its location is not known ahead of time. In addition, GauthierDickey has worked with Dr. Christian Grothoff and Dr. Matthew Rutherford in developing DUP, a multi-stream pipeline system

that allows programmers to develop parallel and distributed programs using a combination of filters and pipes that may have multiple input and output streams.

2.2 Publications

1. G. Papp and C. GauthierDickey, "Characterizing and Modeling Multiparty Voice Communication for Multiplayer Games," *19th ITC Specialist Seminar on Network Usage and Traffic*, October 2008.
2. C. GauthierDickey and C. Grothoff, "Bootstrapping of Peer-to-Peer Networks," *DAS-P2P*, August 2008.
3. G. Papp and C. GauthierDickey, "Characterizing Multiparty Voice Communications for Multiplayer Games (extended abstract)," *ACM Sigmetrics*, June 2008.
4. N. Evans, C. GauthierDickey, and C. Grothoff, "Routing in the Dark: Pitch Black," *ACSAC 2007*, December 2007.
5. D. Pittman and C. GauthierDickey, "A Measurement Study of Virtual Populations in Massively Multiplayer Online Games," *ACM NetGames*, September 2007.
6. C. GauthierDickey, V. Lo, and D. Zappala, "Using N-Trees for Scalable Event Ordering in Peer-to-Peer Games," *ACM NOSSDAV*, June 2005.
7. V. Lo, D. Zhou, Y. Liu, C. GauthierDickey, J. Li, "Scalable Supernode Selection in Peer-to-Peer Overlay Networks," *Hot-P2P*, July 2005.
8. C. GauthierDickey, D. Zappala, and V. Lo, "A Fully Distributed Architecture for Massively Multiplayer Online Games," *ACM NetGames*, August 2004.
9. C. GauthierDickey, D. Zappala, V. Lo, and J. Marr, "Low-Latency Cheat-Proof Event Ordering for Peer-to-Peer Games," *ACM NOSSDAV*, June 2004.
10. D. Zappala, V. Lo, and C. GauthierDickey, "The Multicast Address Allocation Problem: A Theoretical Framework and Performance Evaluation," *Special Issue of Computer Networks*, Elsevier Science, Vol. 45, Issue 1, pp. 55–73, May 2004.

11. V. Lo, D. Zappala, and C. GauthierDickey, "A Theoretical Framework for the Multicast Address Allocation Problem," *Global Internet at IEEE Globecom*, October 2002.
12. D. Zappala, C. GauthierDickey, V. Lo, "Modeling the Multicast Address Allocation Problem," *Global Internet at IEEE Globecom*, October 2002.

2.3 Funding

- \$405,000 (Co-PI), *WIRED*, (May 2008–Dec. 2009), "Innovative Partnership for Job Creation and Employment". The goal of this grant was to establish a new program in the Computer Science Department at the University of Denver that would train and certify students in mainframe administration. To date, 40 students have been accepted into the program and the first 20 have graduated, with IBM informing the department that the WIRED students were the highest performing group they had ever had taking the mainframe administration examination. GauthierDickey was responsible for developing and teaching the first course in the 2-course sequence of the program.
- \$88,000 (PI), *Paper Clip Entertainment*, (Jan. 2009–Mar. 2010), "The Development of New Rapid Design Techniques for Video Game Creation" (PI). This grant was given by a local start up company to help develop a game engine that they will be using for a game idea they have. All content and code created will remain property of DU with the stipulation that DU will license the game engine and content to Paper Clip Entertainment for their game. GauthierDickey is responsible for the design of the game engine and the management of the students and project.

3 Teaching

Chris GauthierDickey has taught a variety of courses, from introductory freshmen classes to advanced graduate student classes. All classes listed are those which he was the primary instructor, except as noted.

3.1 University of Denver

- *Distributed Stream Processing* (co-taught), Graduate.

- *Secure Memory Models*, Graduate.
- *Computer Networking*, Undergraduate and Graduate.
- *Networks and Games*, Undergraduate and Graduate.
- *Game Programming I*, Undergraduate, Graduate.
- *Unix Tools*, Undergraduate, Graduate, and non-traditional students.
- *Introduction to Computer Science III*, Undergraduate.

3.2 University of Oregon

- *Introduction to Game Programming*, Undergraduate and Graduate
- *Introduction to XML*, Undergraduate and Graduate
- *Advanced XML*, Undergraduate and Graduate

4 Service

4.1 Committees

- University of Denver, Faculty Search Committee (2006–2009)
- University of Denver, Computer Science Facilities Committee (2006-2009)

4.2 Reviews

- ACM Siggraph
- ACM NOSSDAV
- ACM Sigcomm
- IFIP Networking
- ACM Transactions on Networking
- Elsevier Computer Networks