

Effective Balance of Mobile Education Clients in Mobile Environments

Ding-Jung Chiang¹ Chien-Liang Chen² Ching-Sheng Wang^{2,*}

¹ Department of Digital Multimedia Design, Taipei Chengshih University of Science and Technology
Taipei 112, Taiwan, ROC
dingjung.chiang@gmail.com

² Department of Computer Science and Information Engineering, Aletheia University
New Taipei City 251, Taiwan, ROC
clyde@cobra.ee.ntu.edu.tw, cswang@email.au.edu.tw

Received 2 October 2012; Revised 5 December 2012; Accepted 28 December 2012

Abstract. With the rapid progress of wireless technology, mobile users can retrieve multiple materials with portable devices from mobile service centers. Mobile e-Learning implements the goal at anywhere from time to time. It is an important issue to effectively disseminate various materials in mobile environments. This paper highlights important problems that have mobile e-learning systems from improving the system performance it could be for education. While current systems aim to foster significant improvements in learning, this paper argues that most systems are still limited to just being online material without performance concerns. Mobile learning infrastructure has become a topic for research. A performance-driven model to mobile e-learning is proposed in this paper. A novel methodology for deploying educational clients based on prediction mechanism in mobile environments is presented. We focus on describing the dynamic processing in terms of performance, rather than the details of its implementation.

Keywords: Kalman Filter, e-Learning, Mobile System

References

- [1] S. Acharya, R. Alonso, M. Franklin, S. Zdonik, "Broadcast Disks: Data Management for Asymmetric Communication Environments," In *Proceeding of ACM SIGMOD 1995*, pp. 199-210, 1995.
- [2] S. Acharya, M. Franklin, S. Zdonik, "Dissemination Based Data Delivery Using Broadcast Disks," *IEEE Personal Communications*, vol. 2, no. 6, pp. 50-60, 1995.
- [3] F. Adelstein, S. K. Gupta, G. G. R. III, L. Schwiebert, *Fundamentals of Mobile and Pervasive Computing*, McGraw-Hill, 2005.
- [4] A. Boukerche and H. Owens II, "Media Synchronization and QoS Packet Scheduling Algorithms for Wireless Systems," *ACM Mobile Networks and Applications*, Vol. 10, No. 1-2, pp. 233-249, 2005.
- [5] D.-J. Chiang, T. K. Shih, C.-L. Chen, "Disseminating Data with Time Constraint Based on Multichannel over Ubiquitous Computing Environments," *World Wide Web Journal-Internet and Web Information Systems*, Vol. 14, No. 3, pp. 223-241, 2011.
- [6] T. H. Cormen, C. E. Leiserson, R. L. Rivest, *Introduction to Algorithms*. The MIT, 1992.
- [7] J. Fernandez-Conde and K. Ramamritham, "Adaptive Dissemination of Data in Time-Critical Asymmetric Communication Environments," in *Proceedings of 11th Euromicro Conference on Real-Time Systems*, pp. 195-203, 1999.
- [8] G.K.Zipf, *Human Behaviour and the Principle of the Least Effort*, Addison-Wesley, 1949.
- [9] F. L. Greitzer, O. Kuchar, K. Huston, "Cognitive Science Implications for Enhancing Training Effectiveness in a Serious Gaming Context," *ACM Journal of Educational Resources in Computing*, Vol. 7, No. 3, Article 2, 2007.

* Corresponding author.

- [10] R. Grice and B. Hart-Davidson, "Mapping the Expanding Landscape of Usability: The Case of Distributed Education," *ACM Journal of Computer Documentation*, Vol. 26, No. 4, pp. 159-167, 2002.
- [11] Q. L. Hu, D. L. Lee, W. Lee, "Dynamic Data Delivery in Wireless Communication Environments," in *Proceedings of International Workshop on Mobile Data Access*, pp. 218-229, 1998.
- [12] R. E. Kalman, "A New Approach to Linear Filtering and Prediction Problems," *Transactions of the ASMEV—Journal of Basic Engineering*, Vol. D, No. 82, pp. 35-45, 1960.
- [13] B. B. Marshall, H. Chen, R. Shen, E. A. Fox, "Moving Digital Libraries into the Student Learning Space: The Getsmart Experience," *ACM Journal on Educational Resources in Computing*, Vol. 6, No. 1, Article 2, 2006.
- [14] A. Rojko, D. Hercog, K. Jezernik, "Power Engineering and Motion Control Web Laboratory: Design, Implementation, and Evaluation of Mechatronics Course," *IEEE Transactions on Industrial Electronics*, Vol. 57, No. 10, pp. 3343-3354, 2010.
- [15] C. B. Teo and R. K. L. Gay, "A Knowledge-Driven Model to Personalize E-Learning," *ACM Journal of Educational Resources in Computing*, Vol. 6, No. 1, Article 3, 2006.
- [16] J. W. Wong, "Broadcast Delivery," *Proceedings of the IEEE*, Vol. 76, No. 12, pp. 1566-1577, 1988.