IIM > Vol.2 No.8, August 2010

OPEN ACCESS

# Analysis and Design of Distributed Pair Programming System

PDF (Size:2351KB) PP. 487-497 DOI: 10.4236/iim.2010.28059

## Author(s)

Wanfeng Dou, Yifeng Wang, Sen Luo

## ABSTRACT

Pair Programming (PP) that has gained extensive focus within pedagogical and industrial environments is a programming practice in which two programmers use the same computer to work together on analysis, design, and programming of the same segment of code. Distributed Pair Programming (DPP) system is a programming system to aid two programmers, the driver and the navigator, to finish a common task such as analysis, design and programming on the same software from different locations. This paper first reviews the existing DPP tools and discusses the interaction and coordination mechanism in DPP process. By means of activity theory and language-action theory, some basic requirements of the DPP system are presented. Then, a design framework of such system and functions of each sub-system are deeply analyzed. Finally, a system prototype is implemented by plug-in style in Microsoft Visual Studio environment.

## KEYWORDS

Pair Programming, Distributed Pair Programming, Software Engineering, Extreme Programming

## Cite this paper

W. Dou, Y. Wang and S. Luo, "Analysis and Design of Distributed Pair Programming System," *Intelligent Information Management*, Vol. 2 No. 8, 2010, pp. 487-497. doi: 10.4236/iim.2010.28059.

## References

[1] [1] R. Duque and C. Bravo, "Analyzing Work Productivity and Program Quality in Collaborative Programming," The 3rd International Conference on Software Engineering Advances, Sliema, 2008, pp. 270-276.

[2] [2] D. Preston, "Using Collaborative Learning Research to Enhance Pair Programming Pedagogy," ACM SIGITE Newsletter, Vol. 3, No. 1, January 2006, pp. 16-21.

[3] [3] L. Williams, R. Kessler, W. Cunningham and R. Jefferies, "Strengthening the Case for Pair Programming," IEEE Software, Vol. 17, No. 11, 2000, pp. 19-21.

[4] [4] T. Schummer and S. Lukosch, "Understanding Tools and Practices for Distributed Pair Programming," Journal of Universal Computer Sciences, Vol. 15, No. 16, 2009, pp. 3101-3125.

[5] [5] M. M. Muller, "Two Controlled Experiments Concerning the Comparison of Pair Programming to Peer Review," Journal of Systems and Software, Vol. 78, No. 2, 2005, pp. 166-179.

[6] [6] L. Williams, R. R. Kessler, W. Cuningham and R. Jeffries, "Strengthening the Case for Pair Programming," IEEE Software, Vol. 17, No. 4, 2000, pp. 19-25.

[7] [7] J. Ncwroclci and A. wojciechowski, "Experimental Eva- luation of Pair Programming," Proceedings of European Software Control and Metrics Conference, London, 2001.

[8] [8] E. Arishoim, H. Gallis, T. Dyba and D. I. K. Sjoberg, "Evaluating Pair Programming with Respect to System Complexity and Programmer Expertise," IEEE Transactions on Software Engineering, Vol. 33, No. 2, 2007, pp. 65-86.

[9] [9] H. Gallis, E. Arishoim and T. Dyba, "An Initial Framework for Research on Pair Programming," Proceedings of the 2003 ACM-IEEE International Symposium on Empi- rical Software Engineering,

• Open Special Issues
• Published Special Issues
• Special Issues Guideline

IIM Subscription

Most popular papers in IIM

About IIM News

Frequently Asked Questions

Recommend to Peers

Recommend to Library

Contact Us

Toronto, 2003, pp. 132-142.

[10] [10] C. McDowell, L. Werner, H. Bullock and J. Fernald, “The Effects of Pair Programming on Performance in an Introductory Programming Course,” Proceedings of the 33rd Technical Symposium on Computer Science Education, Cincinnati, 2002, pp. 38-42.

[11] [11] N. Nagappan, L. Williams, et al., “Improving the CS1 Experience with Pair Programming,” Proceedings of the 34rd Technical Symposium on Computer Science Education, Reno, 2003, pp. 359-362.

[12] [12] L. Williams and R. L. Upchurch, “In Support of Student Pair Programming,” Proceedings of the 32nd Technical Symposium on Computer Science Education, Charlotte 2001, pp. 327-331.

[13] [13] P. Baheti, E. Gehringer and D. Stotts, “Exploring the Efficacy of Distributed Pair Programming,” Proceedings of XP Universe, Springer-Verlag, Chicago, 2002, pp. 208-220.

[14] [14] L. Williams, D. M. Scott, L. Layman and K. Hussein, “Eleven Guidelines for Implementing Pair Programming in the Classroom,” Agile 2008 Conference, Kopaonik, 2008, pp. 445-451.

[15] [15] L. Werner, B. Hanks and C. McDowell, “Pair Programming Helps Female Computer Science Students,” ACM Journal of Education Resources in Computing, Vol. 4, No. 1. 2004, pp. 1-8.

[16] [16] H. Natsu, J. Favela, et al., “Distributed Pair Programming on the Web,” Proceedings of the 4th Mexican International Conference on Computer Science, Los Alamitos, 2003, pp. 81-88.

[17] [17] B. Hanks, “Tool Support for Distributed Pair Programming: An Empirical Study,” Proceedings of Conference Extreme Programming and Agile Methods, Calgary, 2004, pp. 1-18.

[18] [18] S. Hupfer, L. T. Cheng, S. Ross and J. Patterson, “Introduction Collaboration into an Application Development Environment,” Proceedings of the Computer Supported Cooperative Work, ACM Press, New York, 2004, pp. 21-24.

[19] [19] F. Maurer, “Supporting Distributed Extreme Programming,” Proceedings of Conference on Extreme Progra- mming and Agile Methods, Springer Verlag, London, 2002, pp. 13-22.

[20] [20] T. Schummer and J. Schummer, “Support for Distributed Teams in Extreme Programming,” In: G. Succi and M. Marchesi, Eds., Extreme Programming Examined, Addison Wesley, Boston, 2001, pp. 355-377.

[21] [21] M. Reeves and J. Zhu, “Moomba: A Collaborative Environment for Supported Extreme Programming in Global Software Development,” In: Lecture Notes in Computer Science: Extreme Programming and Agile Process in Software Engineering, Springer, London, 2004, pp. 38-50.

[22] [22] C. W. Ho, S. Raha, E. Gehringer and L. William, “Sangam: A Distributed Pair Programming Plug-in for Eclipse,” Proceedings of the 2004 OOPSLA Workshop on Eclipse Technology Exchange, New York, 2004, pp. 73- 77.

[23] [23] K. Elizabeth, A. Dwight et al., “A Development Environment for Distributed Synchronous Collaborative Programming,” Proceedings of the 13th Annual SIGCSE Conference on Innovation and Technology in Computer Science Education, Madrid, 2008, pp. 158-162.

[24] [24] R. Duque and C. Bravo, “Analyzing Work Productivity and Program Quality in Collaborative Programming,” The 3rd International Conference on Software Engineering Advances, 2008, pp. 270-276.