Development of a tele-guidance system with fuzzy-based secondary controller

Phung M.D., Nguyen T.V.T., Quach C.H., Tran Q.V.
Department of Electronics and Computer Engineering, University of Engineering and Technology, Vietnam National University, Hanoi, Viet Nam

Abstract: Dealing with the uncertainties of Internet characteristics is an important issue that needs being taken into account in developing Internet-based real-time systems. In this paper, we present our approach in applying fuzzy logic to develop back-up mechanisms for an Internet-based mobile robot to deal with unwanted network problems such as long delays or network interruptions. A tele-guidance application involving the remote control of a mobile robot via the Internet is set up as the context to verify the effectiveness and applicability of the proposed approach. ©2010 IEEE.
Author Keywords: Data transmission; Distributed control; Fuzzy logic; Internet; Networked robot; Robot navigation

Year: 2010
Source title: 11th International Conference on Control, Automation, Robotics and Vision, ICARCV 2010
Art. No.: 5707338
Page : 1826-1830
Link: Scorpus Link
Correspondence Address: Phung, M. D.; Department of Electronics and Computer Engineering, University of Engineering and Technology, Vietnam National University, Hanoi, Viet Nam
Conference name: 11th International Conference on Control, Automation, Robotics and Vision, ICARCV 2010
Conference date: 7 December 2010 through 10 December 2010
Conference location: Singapore
Conference code: 84059
ISBN: 9.78142E+12
DOI: 10.1109/ICARCV.2010.5707338
Language of Original Document: English
Abbreviated Source Title: 11th International Conference on Control, Automation, Robotics and Vision, ICARCV 2010
Document Type: Conference Paper
Source: Scopus
Authors with affiliations:

- Phung, M.D., Department of Electronics and Computer Engineering, University of Engineering and Technology, Vietnam National University, Hanoi, Viet Nam
- Nguyen, T.V.T., Department of Electronics and Computer Engineering, University of Engineering and Technology, Vietnam National University, Hanoi, Viet Nam

- Quach, C.H., Department of Electronics and Computer Engineering, University of Engineering and Technology, Vietnam National University, Hanoi, Viet Nam
- Tran, Q.V., Department of Electronics and Computer Engineering, University of Engineering and Technology, Vietnam National University, Hanoi, Viet Nam

References:

- Golberg, K., Mascha, M., Desktop teleoperation via the World Wide Web Proceedings of the 1995 IEEE International Conference on Robotics and Automation, May 1995, pp. 654-659
- Luo, R.C., Chen, T.M., Development of a multi-behavior based mobile robot for remote supervisory control through the Internet (2000) IEEE/ASME Trans. Mechatronics, 5 (4), pp. 376-385. , Dec
- Goldberg, K., Siegwart, R., (2002) Beyond Webcams: An Introduction to Online Robots, , Cambridge, MA: MIT Press
- Taylor, K., Dalton, B., Issues in Internet telerobotics Proc. Int. Conf. Field and Service Robotics, Canberra, Australia, 1997, pp. 151-157
- Sayers, C., (1998) Remote Control Robotics, , New York: Springer Verlag
- http://cwis.usc.edu/dept/garden/Paulos, E., Canny, J., Delivering real reality to the World Wide Web via telerobotics Proceedings of the 1996 IEEE International Conference on Robotics and Automation, April 1996, pp. 1694-1699
- Jia, S., Takase, K., Internet-Based Robotic System Using CORBA as Communication Architecture (2002) Journal of Intelligent and Robotic Systems, 34, pp. 121-134
- Wang, D., Yi, J., Zhao, D., Yang, G., Teleoperation System of the Internet-based Omnidirectional Mobile Robot with A Mounted Manipulator Proceedings of the 2007 IEEE International Conference on Mechatronics and Automation, August 5 - 8, 2007
- Liu, P.X., Meng, M.Q.-H., Liu, P.R., Yang, S.X., An End-to-End Transmission Architecture for the Remote Control of Robots over IP Networks (2005) IEEE/ASME Transactions on Mechatronics, 10 (5). , October
- Wirza, R., End-to-end congestion control protocols for remote programming of robots, using heterogeneous networks: A comparative analysis (2008) Journal of Robotics and Autonomous Systems, 56, pp. 865-874
- http://www.drrobot.com/products/item_downloads/Sputnik_2.pdfAttaway, S., (2009) Matlab: A Practical Introduction to Programming and Problem Solving, , Butterworth-Heinemann Publisher, February
- Reese, G., (2000) Database Programming with JDBC and Java, , Second edtion, O'Reilly & Associates, November
- Brown, S., (1999) Visual Basic 6 Complete, , Sybex Publisher, March
- Postel, J., User Datagram Protocol (1980) RFC, 768
- Postel, J., Transmission Control Protocol (1981) RFC, 793. , DARPA Internet Program Protocol Specification