Comment on  
“Performance Evaluation of VDSL Network with Fuzzy Control Policing Mechanisms”  
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Abstract  

It is shown that a significant part of the text of the paper entitled “Performance Evaluation of VDSL Network with Fuzzy Control Policing Mechanisms” by Lekcharoen and Jittawiriyanukoon (2005), published in Assumption University Journal of Technology 8(4):172-7, is constructed by directly copying texts from a set of selected papers.  

Keywords: Copy and paste.  

Introduction  

The texts are presented as they appear in the paper by Lekcharoen and Jittawiriyanukoon (2005). The texts in square brackets (for example, ['b', instead of ‘a’]) indicate that the content has been slightly changed or omitted (for example, ['', instead of ‘a’]) when compared to the original source. Italic style is used for notes and comments related to the cited material.  

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The following text can also be found in Viljamaa (2002), p. 1:  
“Fuzzy control is based on fuzzy logic, which provides a most efficient way to handle inexact information as a basis of reasoning. With fuzzy logic it is possible to convert knowledge, which is expressed in an uncertain form, to an exact and precise output for uncertain systems. In fuzzy control, the controller can be simply represented by if-then-else rules. The interpretation of the controller is fuzzy but the controller will process an input-data then produce an exact output-data in a deterministic way.”  

The following text can also be found in Catania et al. (1996), p. 449:  
“However, traditional … have proved to be inefficient in coping with the conflicting requirements of ideal policing, that is, [a] low … This ['lead', instead of ‘led’] us to explore alternative solutions based on artificial intelligence techniques, specifically, in the field of fuzzy systems. In this paper, we propose … fuzzy logic … that aims at detecting violations of the parameters negotiated. Simulation results show that … performance of our fuzzy ['policing', instead of ‘policer’] … much better than … conventional policing ['ones’, instead of ‘mechanisms’] …”  

The following texts can also be found in Al-Wakeel et al. (1999), p. 1:  
“the performance of ['three', instead of ‘four’] … policing mechanisms, namely: Leaky Bucket (LB), Jumping Window (JW) (and) Triggered Jumping Window (TJW).”;

“In ['VDSL’, instead of ‘ATM’] networks, large number of traffic sources become … active … at the peak rate, or close to it, causing … congestion. To prevent this situation, some congestion control mechanisms …”;

“the main performance measures such as … ['end-to-end’, instead of ‘cell’] delay, throughput and other grade of service measures …”
The following text can also be found in Rathgeb E.P. (1991), pp. 326-7:
“Modeling of … Policing”;
“Traffic Source Model[s]”;
“In addition to these requirements, mechanism ‘of’, instead of ‘to’] parameter violations must be short to avoid flooding of the relatively small buffers in the network. To meet these somewhat conflicting requirements, several policing mechanism have been proposed …”;

![Fig. 1. Two-phase burst/silence source model (Rathgeb [1991]).](image)

“The number of ‘packets’, instead of ‘cells’] per burst is assumed to have a geometric distribution with mean $E[X]$; the duration of the silence phases is assumed to be distributed according to a negative-exponential distribution with mean $E[S]$; and inter-packet arrival time during a burst is given by $\Delta$. With $\alpha^{-1} = E[X] \times \Delta$ and $\beta^{-1} = E[S]$”.

One can observe that the formulae above do not make sense without the remaining text of the sentence, which can be found in Rathgeb [1991]. Also, one can compare Fig. 1 above with the original figure from the source, Rathgeb [1991], which is shown below:

![Geometric, Mean $E[X]$. Negative-Exponential, Mean $E[S]$.](image)

Fig. 1. Two-phase burst/silence source model (Rathgeb [1991]).

The following text can also be found in Cisco Systems, Inc. (1999), p. QC-209:
“Traffic policing allows ‘us’, instead of ‘you’] to control the maximum rate of traffic sent or received ‘by’, instead of ‘on’] an interface …”

The following text can also be found in Yang [2002], pp. 1-2:
“In this section, we describe the traffic model … the simulation. In our simulation, a burst traffic stream from a single source is modeled as an ‘burst/silence’, instead of ON/OFF’) traffic stream. ‘The burst/silence ratio is’, instead of ‘ON-periods and OFF-periods are’) strictly alternating.”

The following text can also be found in Al-Wakeel et al. (1999), p. 1:
“Various congestion control traffic policing mechanisms have been … Leaky Bucket (LB), Jumping Window (JW) and Triggered Jumping Window (TJW).”

The following text can also be found in Ascia et al. (2001), p. 1539:
“In this section, we will first describe a new fuzzy ‘control policing’, instead of ‘Priority Control (FPC)’) mechanism, which meets the requirements of performance, flexibility and cost-effective implementation ‘for VDSL’, instead of ‘of a high-speed packet-switched’) network.”

The following texts can also be found in Pitsillides et al. (1997), p. 210:
“Fuzzy logic is a method for representing information in a way that resembles natural human communication, and for handling this information in the way that is similar to human reasoning.”;

“Concepts of fuzzy sets, fuzzy logic, and fuzzy logic control have been introduced and developed by ‘(Hu and Peter 2000).’, instead of ‘Lofti Zadeh…’].”

The following texts can also be found in Hu and Petr (2000), p. 699:
“Fuzzy control denotes the field within control engineering [or computer science] in which fuzzy set theory and fuzzy inference are used to derive control law. It is especially useful for simulations in which either the system to be controlled or its input cannot be adequately modeled mathematically.”;
“The concept of a fuzzy set is an extension of the concept of a tradition, or crisp set. For a crisp set ['+', the', instead of 'B, … This'] relationship can also be expressed as a mapping whose domain is some characterization of possible elements of ['+', instead of ‘B'] and whose range is the binary space ['+', instead of ‘{0, 1}']. This mapping is called the characteristic function of the crisp set ['+', instead of ‘B’]. A fuzzy set, on the other hand, is defined by a membership function whose range is the closed interval ['+', instead of ‘{0, 1}]]. Any value between 0 and 1 can express the degree of membership of a particular element in the fuzzy set. This concept of fuzzy sets makes it possible to use fuzzy inference, in which the knowledge of an expert in a field of application is expressed as a set of “If–Then” rules, leading to algorithms describing what action should be taken based on currently observed information, or in our case, on predicted future information.”;

“Fuzzy controllers are the applications of fuzzy sets and fuzzy inference in control theory. Their operation is typically divided into the following three phases.”

The following text can also be found in Zhang (2002), p. 10:

“Fuzzifier”;

“The fuzzifier converts the input system performance parameters into suitable ['+', instead of ‘linguistic’] values ['that', instead of ‘which’] are needed in the inference engine.”

Note: The reference by Hu and Petr (2000) is cited in the paper by Lekcharoen and Jittawiriyanukoon [2005], however, there is no indication whatsoever that whole passages of the said reference have been copied and pasted.

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The following texts can also be found in Zhang (2002), p. 10:

“Fuzzy Rule Base: The fuzzy rule base contains a set of fuzzy control rules, defined in such a ['+', instead of ‘linguistic’] way, to describe the control policy.”;

“Inference Engine: The inference engine infers the fuzzy control action under the fuzzy control rules and the related input ['+', instead of ‘linguistic’] parameters.”;

“Defuzzifier: The defuzzifier converts the inferred fuzzy control action into a nonfuzzy control action under a defuzzification strategy.”;

“To summarize, a fuzzy inference engine maps fuzzy sets to ['numerical non', instead of ‘{]}] fuzzy sets. In control engineering applications we ['+', instead of ‘almost’] always deal with numerical values. The Fuzzifier and Defuzzifier modules act as interfaces between ['the’, instead of ‘linguistic’] world of the fuzzy inference engine and the world of numerical values. The Fuzzifier module takes a numerical value and maps it to a fuzzy set, while the Defuzzifier module takes a fuzzy set and produces a non-fuzzy output whose objective is to represent the possibility distribution of the inference.”

The following texts can also be found in Hu and Petr (2000), pp. 699-700:

“Regulator Input Fuzzification:”;

“Inference, Fuzzy Rules and Defuzzification:”;

“Fuzzy sets are involved only in rule premises. Rule consequences are crisp functions of the output variables (usually linear functions). It is robust because few rules are needed for control.”;

“There is no separate defuzzification step.”;

“Based on our defined measurement input variables and their membership functions, the fuzzy system is described by ['five', instead of ‘eight’] fuzzy IF-THEN rules, each of which locally represents a linear input-output relation for the regulator.”

The following texts can also be found in Pitsillides (1997), pp. 211-212:

“The selection of rule base is based on ['+', instead of ‘our’] our experience[s] and beliefs on how the system should behave.”;

“Recently, in the fuzzy control literature, some formal techniques for obtaining a rule base by using artificial neural networks or genetic algorithms ['has been developed', instead of ‘have appeared’]. Nevertheless, we have ['employed', instead of ‘used’] the conventional trial and error approach.”
The following text can also be found in Chandramathi and Shanmugavel [2003]:
“Fuzzy logic controller design is implemented [‘by’, instead of ‘’] using …”

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The following text can also be found in Chandramathi and Shanmugavel (2003):
“MATLAB [‘6.1’, instead of ‘5.3’] version. Whenever there is a change [‘’, instead of ‘user QoS requirement or’] in the arrival rate only some rules [‘’, instead of ‘out of the 135’] are fired leading to changes in the indices, which in turn, changes …”.


The following text can also be found in McDysan and Spohn (1995), pp. 417-8:
“Poisson Arrival [‘’, instead of ‘s and Markov’] Processes’;
“Like many random events, Poisson arrivals occur such that for each increment of time (T), no matter how large or small, the probability of arrival is independent of any previous history. These events may be individual labels, a burst of labels, label or packet service completions, or other arbitrary events.”;

The probability of the inter-arrival time between event t, is [‘defined by’, instead of ‘called’] the inter-arrival time probability density [‘function (pdf)’, instead of ‘’]. The following formula gives the resulting probability [‘density function (pdf)’, which the’ instead of ‘that’] inter-arrival time t is larger than some value x when the average arrival rate is λ events per second:”;

“p(t > x) = Fx(x) = \int_0^x e^{-\lambda y} dy = 1 - e^{-\lambda x}.

Lekcharoen and Jittawiriyanukoon (2005) use wrong expressions for both the probability density function (pdf) and the cumulative distribution function (cdf) of the exponential random variable:
“f(t) = \begin{cases} x e^{\lambda x}, & \text{for } x \geq 0 \\
0, & \text{for } x < 0 \end{cases}

p(t > x) = 1 - Fx(x) = e^{-\lambda x},

which originate from Pakdeepinit [2001], p. 18.
The correct expressions are shown below, see for example Vastola [1996]:
px(x) = \begin{cases} x e^{-\lambda x}, & \text{for } x \geq 0 \\
0, & \text{for } x < 0 \end{cases}
P(x \leq x) = \int_0^x \lambda e^{-\lambda y} dy = 1 - e^{-\lambda x}
P(x > x) = 1 - Fx(x) = e^{-\lambda x}.
The following text can also be found in Mower:
“service times are randomly distributed”;
“by the [‘’, instead of ‘negative’] exponential probability distribution. This is a mathematically convenient assumption if arrival rates are Poisson distributed.”
The following text can also be found in Agilent Technologies [2000], p. 6:
“Source Traffic Descriptor”;
“The source traffic descriptor is the subset of traffic parameters requested by the source (user), which characterizes the traffic that will (or should) be submitted during the connection.”

Conclusion

This comment shows that multiple concatenations of textual passages being copied from various sources take place in the paper by Lekcharoen and Jittawiriyanukoon (2005) The copied texts have not been enclosed in quotation marks and most of them have not been cited in the list of references of the said paper.

References

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