BOOK PREPARATION FORM

**1. BOOK INFORMATION**

1.1. Title of the Book

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| Overview of Bayesian Network |

1.2. Book Topics and Keywords  
  
Topic 1*: Applied Mathematics*

Keywords:   
  
Mathematical Modeling, Applied Probability, Bayesian network, Bayesian inference

Topic 2: *Computer and Information Science*  
  
Keywords:   
  
Machine Learning, Probabilistic Graphical Model, Bayesian network, Bayesian inference

1.3. About the Book

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| Bayesian network is a combination of probabilistic model and graph model. It is applied widely in machine learning, data mining, diagnosis, etc. because it has a solid evidence-based inference which is familiar to human intuition. However, Bayesian network may cause confusions because there are many complicated concepts, formulas and diagrams relating to it. Such concepts should be organized and presented in such a clear manner that understanding it is easy. This is the goal of this report. The report includes 5 main sections that cover principles of Bayesian network. The section 1 is an introduction to Bayesian network giving some basic concepts. Advanced concepts are mentioned in section 2. Inference mechanism of Bayesian network is described in section 3. Parameter learning which tells us how to update parameters of Bayesian network is described in section 4. Section 5 focuses on structure learning which mentions how to build up Bayesian network. In general, three main subjects of Bayesian network are inference, parameter learning, and structure learning which are mentioned in successive sections 3, 4, and 5. Section 6 is the optional one mentioning applications of Bayesian network. Section 7 is the conclusions. Main contents of this reported are extracted from the book “Learning Bayesian Networks” by Richard E. Neapolitan (2003) and the PhD dissertation “A User Modeling for Adaptive Learning” by Loc Nguyen (2014). This report focuses on discrete Bayesian network whose nodes are discrete random variables. |

**2. BOOK EDITOR INFORMATION**  
  
2.1. Book Editor  
  
First Name and Surname:

|  |
| --- |
| Loc Nguyen |

University:

|  |
| --- |
| Loc Nguyen’s Academic Network |

Country:

|  |
| --- |
| Vietnam |

Email:

|  |
| --- |
| ng\_phloc@yahoo.com |

Alternative email:

|  |
| --- |
| ngphloc@gmail.com |

Society (If you are a member of a Society please enter the information below):

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| --- |
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Editor’s short CV (maximum 130 words):

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| Loc Nguyen is an independent scholar at Loc Nguyen's Academic Network from 2017. He holds Postdoctoral degree in Computer Science, certified by INSTICC in 2015. Currently, he is interested in poetry, computer science, statistics, mathematics, education, and medicine. He serves as reviewer and editor in a wide range of international journals and conferences from 2014. He is volunteer of Statistics Without Borders from 2015. He was granted as Mathematician by London Mathematical Society for Postdoctoral research in Mathematics from 2016. He was awarded as Professor by Scientific Advances and Science Publishing Group from 2016. He was awarded Doctorate of Statistical Medicine by HOSREM from 2016. He has published 61 papers in journals, books and conference proceedings. He is author of 2 scientific books and 2 postdoctoral dissertations. He is author and creator of 6 scientific and technological products. |

Number of publications

* Journal Papers authored/co-authored: 31
* Book Chapters authored/co-authored: 5
* Books edited/co-edited:
* Other publications (abstracts, reports, conference proceedings, preprints etc.): 21