

# Vesin Boban

ASSOCIATE PROFESSOR · COMPUTER SCIENCE

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*e-learning · learning analytics · personalisation · software design · recommendation systems*

## Education

### PhD in Computer Science

DEPARTMENT OF MATHEMATICS AND INFORMATICS, FACULTY OF SCIENCE, UNIVERSITY OF NOVI SAD

*Novi Sad, Serbia*

2014

- Dissertation title: Personalization of learning process in tutoring system supported with the semantic web technologies

### MSc in Computer Science (Magister degree)

DEPARTMENT OF MATHEMATICS AND INFORMATICS, FACULTY OF SCIENCE, UNIVERSITY OF NOVI SAD

*Novi Sad, Serbia*

2007

- Average grade: 10.00 (out of 10)
- Dissertation title: Design and implementation of tutoring system for distance learning of Java programming language

### BSc in Computer Science

DEPARTMENT OF MATHEMATICS AND INFORMATICS, FACULTY OF SCIENCE, UNIVERSITY OF NOVI SAD

*Novi Sad, Serbia*

2002

- Average grade: 8.97 (out of 10)
- Dissertation title: Function point analysis

## Experience

### Associate professor

UNIVERSITY OF SOUTH-EASTERN NORWAY

*Vestfold, Norway*

*June. 2018 - PRESENT*

- Department of Business, History and Social Sciences, Vestfold, Norway
- Information technologies field - **Full time**

### Postdoctoral fellow

NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY

*Trondheim, Norway*

*April. 2017 - May. 2018*

- Department of Computer Science, Trondheim, Norway
- Information technologies field - **Full time**

### Research Engineer

CHALMERS UNIVERSITY OF TECHNOLOGY / UNIVERSITY OF GOTHENBURG

*Gothenburg, Sweden*

*September. 2015 - April. 2017*

- Department of Computer Science and Engineering, Gothenburg, Sweden
- Software engineering field - **Full time**

### Software Engineer

SCHNEIDER ELECTRIC DMS NS

*Novi Sad, Serbia*

*January 2015 – August 2015*

- Training team, Novi Sad, Serbia
- Information technologies field - **Full time**

### Lecturer

NOVI SAD SCHOOL OF BUSINESS

*Novi Sad, Serbia*

*December. 2007 - January 2015*

- Department of Informatics, Novi Sad, Serbia
- Computer science field - **Full time**

### Teaching assistant

NOVI SAD SCHOOL OF BUSINESS

*Novi Sad, Serbia*

*December. 2002 - December. 2007*

- Department of Informatics, Novi Sad, Serbia
- Computer science field - **Full time**

### System analyst

UNIVERSITY OF NOVI SAD, SERBIA

*Novi Sad, Serbia*

*January. 2002 - June. 2002*

- Department of Mathematics and Informatics, Novi Sad, Serbia
- **Full time**

## Court expert (Expert witness)

SERBIAN COURT

- The field of Information Technology, Involved in over 50 cases
- **Part time**

Serbia

2006 - PRESENT

## Teaching experience

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### LECTURER

2020-...	<b>Object-oriented programming I and II</b> , University of South-Eastern Norway	<i>Vestfold, Norway</i>
2018-2020	<b>Web application development</b> , University of South-Eastern Norway	<i>Vestfold, Norway</i>
2019-...	<b>Data visualisation</b> , University of South-Eastern Norway	<i>Vestfold, Norway</i>
2017	<b>Web technologies</b> , Norwegian University of Science and Technology	<i>Trondheim, Norway</i>
2008-14	<b>Software engineering</b> , University on Novi Sad	<i>Novi Sad, Serbia</i>
2010-14	<b>Design of e-business systems</b> , University on Novi Sad	<i>Novi Sad, Serbia</i>
2011-14	<b>Application of Internet technologies</b> , University on Novi Sad	<i>Novi Sad, Serbia</i>
2009-11	<b>Applied programming</b> , University on Novi Sad	<i>Novi Sad, Serbia</i>

### TEACHING ASSISTANT

2018	<b>Informatics Project II</b> , Norwegian University of Science and Technology	<i>Trondheim, Norway</i>
2016-17	<b>Advanced software architecture</b> , Chalmers / University of Gothenburg	<i>Gothenburg, Sweden</i>
2006-07	<b>Database management systems</b> , University on Novi Sad	<i>Novi Sad, Serbia</i>
2002-05	<b>Databases</b> , University on Novi Sad	<i>Novi Sad, Serbia</i>
2002-06	<b>Programming languages</b> , University on Novi Sad	<i>Novi Sad, Serbia</i>
2006-07	<b>Integrated development environments</b> , University on Novi Sad	<i>Novi Sad, Serbia</i>
2006-07	<b>Web design</b> , University on Novi Sad	<i>Novi Sad, Serbia</i>

## Service to Profession

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### MANUSCRIPT REVIEWING FOR JOURNALS

2021-...	<b>IEEE Transactions on Learning Technologies</b> , published by IEEE Education Society
2011-...	<b>Computer Science and Information Systems</b> , published by ComSIS Consortium
2013-...	<b>Artificial Intelligence Review</b> , published by Springer
2013-...	<b>Knowledge-Based Systems</b> , published by Elsevier
2013-...	<b>International Journal of Information Technology &amp; Decision Making</b> , published by World Scientific
2013-...	<b>Computer Applications in Engineering Education</b> , published by Wiley Periodicals
2012-...	<b>Interactive Learning environments</b> , published by Routledge
2020-...	<b>Information Systems Frontiers</b> , published by Kluwer Academic Publishers
2020-...	<b>IEEE Transactions on Learning Technologies</b> , published by IEEE Education Society
2013-...	<b>Computers &amp; Education</b> , published by Elsevier

### DEVELOPMENT AND REVIEW OF CURRICULUMS

2017-14	<b>Accreditation Committee at Novi Sad school of business, University of Novi Sad, Serbia</b> , member	<i>Novi Sad, Serbia</i>
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### PROGRAMME COMMITTEE MEMBER

2020-2022	<b>Innovation and Technology in Computer Science Education (ITiCSE) Conference</b> , Web Page Coordinator	<i>Trondheim, Norway</i>
2020	<b>Norsk konferanse for organisasjoners bruk av IT - NOKOBIT20</b> , Program committee	<i>Sundvollen, Norway</i>
2018	<b>ACM Interaction Design and Children (IDC) Conference</b> , Committee member	<i>Trondheim, Norway</i>
2015	<b>International KES Conference on Smart education and e-learning</b> , Committee member	<i>Sorrento, Italy</i>

## Research Experience

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### Towards adaptive assessment within smart learning environment

*Norway*

PROJECT MANAGER

2019- 2020

- University of South-eastern Norway
- Financed by Diku – Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education
- Value of the grant: 290 000 NOK

## InternAbroad: University of South-Eastern Norway - Universidade Federal Rural de Pernambuco

Norway

PROJECT COORDINATOR

2019-2022

- University of South-eastern Norway
- Financed by Diku – Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education
- INA-2019/10093
- Value of the grant: 300 000 NOK

## Future learning: Orchestrating 21st century learning ecosystems using analytics

Norway

PROJECT SCIENTIST

2017-2020

- Norwegian University of Science and Technology, Trondheim, Norway
- financed by *The Research Council of Norway*

## Multi-layer aggregator solutions to facilitate optimum demand response and grid flexibility

EU

PROJECT SCIENTIST

2019-2021

- TÜBİTAK (Turkey), SWEA (Sweden), EUDP (Denmark), UEFISCDI (Romania), and RCN (Norway)
- Financed by ERA-Net Smart Energy Systems SG+ 2017 Program, SMART-MLA Project No: 89029

## PROMPT - Professional Master's Education in Software Development

Sweden

PROJECT SCIENTIST

2015-2017

- Chalmers University of Technology / University of Gothenburg
- financed by the *Knowledge Foundation's program "Expert Skills for Innovation"*

## Adaptive personalization of learning environments

Serbia

PROJECT SCIENTIST

2012-2013

- Joint project of Faculty of Science (Novi Sad, Serbia) and Faculty of Electrical Engineering and Informatics (Košice, Slovakia)
- supported by ministries of science of both countries

## Intelligent techniques and their integration into wide-spectrum decision support

Serbia

PROJECT SCIENTIST

2011-2014

- University of Novi Sad, Serbia
- supported by Ministry of Education, Science and Technological Development of the Republic of Serbia

## Infrastructure for technology enhanced learning in Serbia

Serbia

PROJECT SCIENTIST

2011-2014

- University of Novi Sad, Serbia
- supported by Ministry of Education, Science and Technological Development of the Republic of Serbia

## International business administration

Serbia

PROJECT SCIENTIST

2009-2010

- University of Novi Sad, Serbia
- organized by GTZ - Deutsche Gesellschaft für Technische Zusammenarbeit

## Honors & Awards

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### INTERNATIONAL

- |      |  |                   |
|------|--|-------------------|
| 2018 | <b>Best Demo Award</b> , International Conference on Learning Analytics & Knowledge  | Sydney, Australia |
| 2021 | <b>Best Paper Award</b> , The 14th Int. Conf. on Advances in Human-oriented and Personalized Mechanisms, Technologies and Services | Barcelona, Spain  |

### DOMESTIC

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|------|---|--------|
| 2019 | <b>Research Grant from DIKU</b> , Towards adaptive assessment within smart learning environment | Norway |
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## Practical Skills

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<b>Programming</b>	JAVA, PL/SQL, LaTeX
<b>Web</b>	Vaadin, HTML, CSS
<b>Database management systems</b>	Oracle, MySQL
<b>Content management systems</b>	WordPress, Joomla
<b>Graphic design software</b>	CorelDraw, Microsoft Visio, Adobe Premier Pro, Adobe illustrator
<b>Languages</b>	English (fluent), Serbian (native), Norwegian (beginner)

# Publications

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Author or co-author of 1 book, 13 journal papers, 42 research papers and 3 published textbooks.

Enclosed is the list of publications.

## Books

1. Klasnja-Miliević, A., Vesin, B., Ivanović, M., Budimac, Z. & Jain, L. C. *E-Learning Systems: Intelligent Techniques for Personalization* (Springer Publishing Company, Incorporated, 2016).

## Journal articles

1. Bruno, E., Alexandre, B., Ferreira Mello, R., Falcão, T. P., Vesin, B. & Gašević, D. Applications of learning analytics in high schools: a Systematic Literature review. *Frontiers in Artificial Intelligence*, 132 (2021).
2. Mangaroska, K., Martinez-Maldonado, R., Vesin, B. & Gašević, D. Challenges and opportunities of multimodal data in human learning: The computer science students' perspective. *Journal of Computer Assisted Learning* **37**, 1030–1047 (2021).
3. Mangaroska, K., Vesin, B., Kostakos, V., Brusilovsky, P. & Giannakos, M. N. Architecting Analytics Across Multiple E-Learning Systems to Enhance Learning Design. *IEEE Transactions on Learning Technologies* **14**, 173–188 (2021).
4. Klašnja-Milićević, A., Ivanović, M., Vesin, B. & Budimac, Z. Enhancing e-learning systems with personalized recommendation based on collaborative tagging techniques. *Applied Intelligence* **48**, 1519–1535 (2018).
5. Klašnja-Milićević, A., Vesin, B. & Ivanović, M. Social tagging strategy for enhancing e-learning experience. *Computers & Education* **118**, 166–181 (2018).
6. Vesin, B., Mangaroska, K. & Giannakos, M. Learning in smart environments: user-centered design and analytics of an adaptive learning system. *Smart Learning Environments* **5**, 1–21 (2018).
7. Vesin, B., Ivanović, M., Klašnja-Milićević, A. & Budimac, Z. Ontology-based architecture with recommendation strategy in java tutoring system. *Computer Science and Information Systems* **10**, 237–261 (2013).
8. Vesin, B., Milicevic, A. K., Ivanović, M. & Budimac, Z. Applying Recommender Systems and Adaptive Hypermedia for e-Learning Personalization. *Computing and Informatics* **32**, 629–659 (2013).
9. Vesin, B., Ivanović, M., Klašnja-Milićević, A. & Budimac, Z. Protus 2.0: Ontology-based semantic recommendation in programming tutoring system. *Expert Systems with Applications* **39**, 12229–12246 (2012).
10. Klašnja-Milićević, A., Vesin, B., Ivanović, M. & Budimac, Z. E-Learning personalization based on hybrid recommendation strategy and learning style identification. *Computers & Education* **56**, 885–899 (2011).
11. Klašnja-Milićević, A., Vesin, B., Ivanović, M. & Budimac, Z. Integration of recommendations and adaptive hypermedia into Java tutoring system. *Computer Science and Information Systems* **8**, 211–224 (2011).
12. Vesin, B., Ivanović, M. & Budimac, Z. Learning management system for programming in java. *Annales Universitatis Scientiarum De Rolando Eötvös Nominatae, Sectio-Computatorica* **31**, 75–92 (2009).
13. Ivanović, M., Pribela, I., Vesin, B. & Budimac, Z. Multifunctional environment for e-learning purposes. *Novi Sad Journal of Mathematics, NSJOM* **38**, 153–170 (2008).

## Conference proceedings

1. Berntzen, L., Meng, Q., Johannessen, M. R., Vesin, B., Brekke, T. & Laur, I. *Aggregators and Prosumers-An Analysis of Business Model Opportunities in 2021 International Conference on Engineering and Emerging Technologies (ICEET)* (2021), 1–6.
3. Berntzen, L., Meng, Q., Johannessen, M. R., Vesin, B., Brekke, T. & Laur, I. *The Aggregator as a Storage Provider in 2021 11th International Conference on Power and Energy Systems (ICPES)* (2021), 190–195.
2. Berntzen, L., Meng, Q., Vesin, B., Johannessen, M. R., Brekke, T. & Laur, I. *Blockchain for Smart Grid Flexibility-Handling Settlements Between the Aggregator and Prosumers* in (2021).
4. Johannessen, M. R., Berntzen, L., Vesin, B., Meng, Q., Brekke, T. & Laur, I. *User Sentiments Towards Smart Grid Flexibility-A survey of early adopters' attitude towards allowing third parties to control electricity use in households* in (2021).
5. Johannessen, M. R., Berntzen, L., Vesin, B., Meng, Q., Brekke, T. & Laur, I. *Vehicle to Grid and Crisis Management-Potential of V2G for Smart City Power Grids in Norway* in (2021).

6. Vesin, B., Mangaroska, K. & Giannakos, M. N. *Learning Introductory Programming with Smart Learning Environment* in. **2020** (2020).
7. Mangaroska, K., Jaccheri, L., Vesin, B. & Giannakos, M. *The Dynamics of Motivational and Emotional Challenges and Regulation Strategies in Customer-Driven Project-based Learning* in *2019 IEEE 19th International Conference on Advanced Learning Technologies (ICALT)* **2161** (2019), 367–371.
8. Mangaroska, K., Vesin, B. & Giannakos, M. *Cross-platform analytics: A step towards personalization and adaptation in education* in *Proceedings of the 9th international conference on learning analytics & knowledge* (2019), 71–75.
9. Mangaroska, K., Vesin, B. & Giannakos, M. *Elo-rating method: Towards adaptive assessment in e-learning* in *2019 IEEE 19th International Conference on Advanced Learning Technologies (ICALT)* **2161** (2019), 380–382.
10. Klašnja-Milićević, A., Marošan, Z., Ivanović, M., Savić, N. & Vesin, B. *The Future of Learning Multisensory Experiences: Visual, Audio, Smell and Taste Senses in International Conference in Methodologies and intelligent Systems for Technology Enhanced Learning* (2018), 213–221.
11. Mangaroska, K., Özgöbek, Ö., Vesin, B. & Giannakos, M. *Implementation of Elo-Rating method in Recommending Coding Exercises to Programming Students* in *Norsk konferanse for organisasjoners bruk av informasjonsteknologi (NOKOBIT)* (2018).
13. Vesin, B., Klašnja-Milićević, A., Mangaroska, K., Ivanović, M., Jolak, R., Stikkolorum, D. & Chaudron, M. *Web-based educational ecosystem for automatization of teaching process and assessment of students* in *International Conference on Web Intelligence, Mining and Semantics* (2018), 8.
12. Vesin, B., Mangaroska, K., Giannakos, M. & Trætteberg, H. *ProTuS - Interactive learning analytics tool* in *Research demo at the 8th International Learning Analytics and Knowledge (LAK) Conference* (2018).
14. Jolak, R., Vesin, B. & Chaudron R.V., M. *Using Voice Commands for UML Modelling Support on Interactive Whiteboards: Insights and Experiences* in *XX Ibero-American Conference on Software Engineering, Buenos Aires, Argentina* (2017).
15. Mangaroska, K., Vesin, B. & Giannakos, M. *Informing learning design with learning analytics: Can multimodal analytics improve the design of learning experiences?* in *Twelfth European Conference On Technology Enhanced Learning* (2017), Paper-no.
16. Vesin, B., Jolak, R. & Chaudron, M. R. *OctoUML: an environment for exploratory and collaborative software design* in *2017 IEEE/ACM 39th International Conference on Software Engineering Companion (ICSE-C)* (2017), 7–10.
17. Jolak, R., Vesin, B., Isaksson, M. & Chaudron, M. R. *Towards a New Generation of Software Design Environments: Supporting the Use of Informal and Formal Notations with OctoUML*. in *HuFaMo@ MoDELS* (2016), 3–10.
18. Vesin, B., Klašnja-Milićević, A. & Ivanović, M. *Protus 2.1: Applying collaborative tagging for providing recommendation in programming tutoring system* in *International Conference on Web-Based Learning* (2016), 236–245.
19. Ivanović, M., Budimac, Z., Klašnja-Milićević, A. & Vesin, B. *Possibilities to Improve Web-based Assessment in Programming Courses* in *WEBDATANET: Innovation and quality in web-based data collection* (2015).
20. Vesin, B., Klašnja-Milićević, A. & Ivanović, M. *Improving testing abilities of a programming tutoring system* in *2013 17th International Conference on System Theory, Control and Computing (ICSTCC)* (2013), 669–673.
21. Vesin, B., Klašnja-Milićević, A., Ivanović, M. & Budimac, Z. *Applying collaborative tagging and semantic web technologies for providing recommendation in programming tutoring system* in *The 6th International Conference on Information Technology, ICIT 2013, Amman, Jordan* (2013), paper-no.
22. Vesin, B., Klašnja-Milićević, A., Ivanović, M. & Budimac, Z. *Personalised learning in tutoring systems* in *IV symposium Mathematics and application* (2013), 127–137.
23. Ivanović, M., Mitrović, D., Budimac, Z., Vesin, B. & Jerinić, L. *Different roles of agents in personalized programming learning environment* in *International Conference on Web-Based Learning* (2012), 161–170.
24. Klašnja-Milićević, A., Vesin, B., Ivanović, M. & Budimac, Z. *Personalisation of programming tutoring system using Tag-based recommender systems* in *Advanced Learning Technologies (ICALT), 2012 IEEE 12th International Conference on* (2012), 666–667.
25. Sredojević, D., Marčićević, Ž. & Vesin, B. *Information systems in education* in *31st International Conference on Organizational Science Development, Quality, innovation, future, Portorož, Slovenia* (2012), 1103–1108.
26. Vesin, B., Ivanović, M., Klašnja-Milićević, A. & Budimac, Z. *Rule-based reasoning for altering pattern navigation in programming tutoring system* in *15th International Conference on System Theory, Control and Computing* (2011), 1–6.
27. Vesin, B., Ivanović, M., Klašnja-Milićević, A. & Budimac, Z. *Rule-based reasoning for building learner model in programming tutoring system* in *International Conference on Web-Based Learning* (2011), 154–163.
28. Vesin, B., Klašnja-Milićević, A., Ivanović, M. & Budimac, Z. *Ontology-based architecture for providing recommendation in Java tutoring system* in *The 6th International Conference on Information Technology* (2011).

29. Budimac, Z., Ivanović, M., Putnik, Z., Komlenov, Ž., Pribela, I., Klačnja-Milićević, A. & Vesin, B. *E-Learning at the Department of mathematics and informatics – from the first steps to elements of web 2.0 in E-learning, towards knowledge society* (2010).
30. Klačnja-Milićević, A., Vesin, B., Ivanović, M. & Budimac, Z. *Integration of recommendations into Java tutoring system in The 4th international conference on information technology ICIT 2009 Jordan* (2009).
31. Vesin, B., Ivanović, M., Budimac, Z. & Pribela, I. *Mile-Multifunctional Integrated Learning Environment in e-Learning* (2008), 104–108.
32. Vesin, B., Ivanović, M. & Budimac, Z. *Tutoring system for distance learning of Java programming language in 10th Symposium on Programming Languages and Software Tools SPLST 2007, Dobogókő, Hungary* (2007), 310–320.
33. Vesin, B. & Ivanović, M. *Modern educational tools in Proceedings of PRIM2004, 16th Conference on Applied Mathematics, Budva, Montenegro* (2004), 293–302.

### National journals and proceedings of national conferences

1. Vesin, B. *Metodologija razvoja sistema za elektronsko učenje* School of business, Higher School of Professional Business Studies, 1(1), pp. 101-106. 2008.
2. Vesin, B. *Softverska podrška obrazovnim sistemima podučavanja* School of business, Higher School of Professional Business Studies, 3(2), pp. 50-53. 2006.
3. Vesin, B. *Učenje na daljinu preko globalne mreže* School of business, Higher School of Professional Business Studies, 2(2), pp. 60-65. 2006.
4. Jošanov, B. & Vesin, B. *M-Trgovina - novi izazovi poslovanju i tehnologijama* Proceedings of XVIII Info-Teh conference, Vrnjačka banja, Serbia, 65-73. 2003.
5. Vesin, B. *Digitalni potpisi* Zbornik naučno – stručnih radova Više poslovne škole u Novom Sadu, January-June, pp. 202-207. 2003.
6. Vesin, B. *Dizajniranje objektno orijentisanih modela pomoću UML-a* Zbornik naučno - stručnih radova Više poslovne škole u Novom Sadu, January-June, 458-471. 2003.
7. Vesin, B. *Function point analysis* Proceedings of XVIII Info-Teh conference, Vrnjačka banja, Serbia, pp. 112-120. 2003.
8. Vesin, B. *Interfejsi sa dijalogom inteligentnih obrazovnih sistema* Zbornik naučno – stručnih radova Više poslovne škole u Novom Sadu, July-December, 398-402. 2003.
9. Vesin, B. *Primena veštačke inteligencije u obrazovanju* Zbornik naučno – stručnih radova Više poslovne škole u Novom Sadu, July-December, 208-213. 2003.

### Published textbooks

1. Marošan, Z. & Vesin, B. *Application of Information Technologies, practice manual* Novi Sad school of business (University of Novi Sad, 2009).
2. Jošanov, B. & Vesin, B. *Software engineering practicum* Novi Sad school of business (University of Novi Sad, 2004).
3. Ristić, S., Marošan, Z., Klačnja, A. & Vesin, B. *Application of Information Technologies, practice manual* Novi Sad school of business (University of Novi Sad, 2004).