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Davide Fossati

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I am a Computer Scientist. I research and develop innovative technology based on Artificial Intelligence, Data Mining, and Natural Language Processing to support teaching and improve learning.

EDUCATION

- August 2009 **University of Illinois at Chicago**
PhD, Computer Science.
Research: Educational Technology, Natural Language Processing.
Thesis: *Automatic Modeling of Procedural Knowledge and Feedback Generation in a Computer Science Tutoring System.*
Advisor: Dr. Barbara Di Eugenio.
PhD GPA: 4.00/4.00. Cumulative GPA: 3.92/4.00.
- April 2004 **Politecnico di Milano, Italy**
MSc, Computer Engineering.
Final grade: 93/100.
- July 2003 **University of Illinois at Chicago**
MSc, Computer Science.
Thesis: *DIAG-NLP: Improving Intelligent Tutoring Systems with Natural Language Generation Technology.*
Advisor: Dr. Barbara Di Eugenio.
GPA: 3.86/4.00.

WORK EXPERIENCE

- January 2016 - Present **Emory University - Atlanta, GA**
Lecturer of Mathematics and Computer Science
Teaching Computer Science courses. Performing research on Educational Technology, Educational Assessment, and Computer Science Education.
Courses taught:
CS 170: Introduction to Computer Science I (Java programming)
CS 171: Introduction to Computer Science II (Java data structures)
CS 370: Software Engineering with Practicum
- January 2016 - Present **Carnegie Mellon University - Pittsburgh, PA**
Adjunct Professor of Computer Science
Performing research on Educational Technology, Educational Assessment, and Computer Science Education.

August 2010 – **Carnegie Mellon University - Pittsburgh, PA and Doha, Qatar**
December 2015 *Assistant Teaching Professor of Computer Science*

Designing and teaching Computer Science courses. Performing research on Educational Technology, Educational Assessment, and Computer Science Education. Serving in multiple university committees.

Courses taught:

15-110: Principles of Computing (Java)
15-110: Principles of Computing (Python) - *originally co-designed*
15-110: Principles of Computing (R and Excel) - *originally designed*
15-112: Fundamentals of Programming and Computer Science (Python)
15-121: Introduction to Data Structures
15-381: Artificial Intelligence - *partially redesigned*
15-493: Data Mining - *originally designed*
15-539: Independent Study in Computer Science Education - *originally designed*
15-589: Independent Study in Data Mining - *originally designed*

August 2009 - **Georgia Institute of Technology - Atlanta, GA**
July 2010 *Computing Innovation Research Fellow*

Performed research on Educational Technology, Educational Assessment, and Computer Science Education. This work was supported by the Computing Research Association, the Computing Community Consortium, and the National Science Foundation in the context of the Computing Innovation Fellows initiative (<http://cifellows.org>).

Fellowship mentor: Dr. Mark Guzdial

January 2005 - **University of Illinois at Chicago - Chicago, IL**
August 2009 *Teaching Assistant and Research Assistant*

Taught in undergraduate and graduate level courses:

CS 202 - Algorithms and Data structures II.
CS 421 - Natural Language Processing.
CS 476 - Programming Language Design.

Performed research on Educational Technology and Natural Language Processing.

May 2004 - **Reply @logistics - Milan, Italy**
December 2004 *Consultant*

Analyzed, developed, configured, and deployed Information Systems for Warehouse Management.
Customized and deployed *Click Reply WMS* on two paper mills in The Netherlands (Favini Apeldoorn and Favini Meerssen mills).

January 2004 - **Accenture - Milan, Italy**
April 2004 *Intern*

Developed a Human Resources Information System for an International retailer (Metro).
Built a prototype based on *SAP CRM 4.0* for an International food company (Ferrero).

January 2003 - **Elementary School of Gaggiano (Milano), Italy**
June 2003 *Teacher*

Taught a basic Computer Science course for grade school children.

August 2001 - **University of Illinois at Chicago - Chicago, IL**
July 2002 *Teaching Assistant and Research Assistant*

Taught in undergraduate and graduate level courses:

CS 102 - Introduction to Programming.
CS 202 - Algorithms and Data Structures II.
CS 421 - Natural Language Processing.

Performed research on Natural Language Generation for Intelligent Tutoring Systems.

LANGUAGES

Italian (Native language), **English** (Fluent), **French** (Intermediate), **Spanish** (Beginner).

PUBLICATIONS

Peer-reviewed journals

1. Davide Fossati, Barbara Di Eugenio, Stellan Ohlsson, Christopher Brown, and Lin Chen. Data driven automatic feedback generation in the iList intelligent tutoring system. *Technology, Instruction, Cognition, and Learning (TICL), Special Issue on Role of Data in Instructional Processes*, vol. 10(1), pp. 5-26, 2015.
2. Omar AlZoubi, Davide Fossati, Sidney D'Mello, and Rafael Calvo. Affect detection from non-stationary physiological data using ensemble classifiers. *Evolving Systems*, Springer. November 2014.
3. Davide Fossati, Barbara Di Eugenio, Christopher Brown, Stellan Ohlsson, David Cosejo, and Lin Chen. Supporting Computer Science curriculum: Exploring and learning linked lists with iList. *IEEE Transactions on Learning Technologies, Special Issue on Real-World Applications of Intelligent Tutoring Systems*, vol. 2(2), pp. 107-120. April-June 2009.
4. Barbara Di Eugenio, Davide Fossati, Susan Haller, Dan Yu, and Michael Glass. Be brief, and they shall learn: Generating Concise Language Feedback for a Computer Tutor. *International Journal of AI in Education*, 18(4). 2008.

Peer-reviewed conferences

5. Nick Green, Barbara Di Eugenio, Rachel Harsley, Davide Fossati, and Omar AlZoubi. Behavior and Learning of Students using Worked-out Examples in a Tutoring System. *ITS 2016, 13th International Conference on Intelligent Tutoring Systems*, Zagreb, Croatia, June 2016.
6. Rachel Harsley, Barbara Di Eugenio, Nick Green, Davide Fossati, and Sabita Acharya. Integrating Support for Collaboration in a Computer Science Intelligent Tutoring System. *ITS 2016, 13th International Conference on Intelligent Tutoring Systems*, Zagreb, Croatia, June 2016.
7. Rachel Harsley, Nick Green, Mehrdad Alizadeh, Sabita Acharya, Davide Fossati, Barbara Di Eugenio, and Omar AlZoubi. Incorporating Analogies and Worked Out Examples as Pedagogical Strategies in a Computer Science Tutoring System. *SIGCSE 2016, the 47th ACM Technical Symposium on Computer Science Education*, Memphis, TN, March 2016.
8. Rachel Harsley, Nick Green, Barbara Di Eugenio, Sabita Acharya, Davide Fossati, and Omar AlZoubi. Collab-ChiQat: A Collaborative Remaking of a Computer Science Intelligent Tutoring System. *CSCW 2016, Computer-Supported Cooperative Work and Social Computing*, San Francisco, CA, March 2016.
9. Nick Green, Barbara Di Eugenio, Rachel Harsley, Davide Fossati, Omar AlZoubi, and Mehrdad Alizadeh. Student behavior with worked-out examples in a computer science intelligent tutoring system. *ICEdTech 2015, International Conference on Educational Technologies*, Florianopolis, Santa Catarina, Brazil, November 2015. **Best paper award.**
10. Omar AlZoubi, Davide Fossati, Barbara Di Eugenio, Nick Green, Mehrdad Alizadeh, and Rachel Harsley. A hybrid model for teaching recursion. *SIGITE 2015, 16th Annual Conference on Information Technology Education*, Chicago, IL, October 2015.
11. Barbara Di Eugenio, Nick Green, Omar AlZoubi, Mehrdad Alizadeh, Rachel Harsley, and Davide Fossati. Worked-out example in a computer science intelligent tutoring system. *SIGITE 2015, 16th Annual Conference on Information Technology Education*, Chicago, IL, October 2015. Lightning talk.
12. Mehrdad Alizadeh, Barbara Di Eugenio, Rachel Harsley, Nick Green, Davide Fossati, and Omar AlZoubi. A Study of Analogy in Computer Science Tutorial Dialogues. *CSEDU 2015, 7th International Conference on Computer Supported Education*. Lisbon, Portugal, May 2015.
13. Nick Green, Omar AlZoubi, Mehrdad Alizadeh, Barbara Di Eugenio, Davide Fossati, and Rachel Harsley. A Scalable Intelligent Tutoring System Framework for Computer Science Education. *CSEDU 2015, 7th International Conference on Computer Supported Education*. Lisbon, Portugal, May 2015.

14. Omar AlZoubi, Davide Fossati, Barbara Di Eugenio, and Nick Green. ChiQat-Tutor: An integrated environment for learning recursion. *ITS-AIEDCS 2014, 12th International Conference on Intelligent Tutoring Systems (ITS), 2nd Workshop on AI-supported Education for Computer Science (AIEDCS)*. Honolulu, HI, June 2014. Short paper.
15. Omar AlZoubi, Davide Fossati, Sidney D'Mello, and Rafael Calvo. Affect detection and classification from non-stationary physiological data. *ICMLA 2013, IEEE 12th International Conference on Machine Learning and Applications*. Miami, FL, December 2013.
16. Omar AlZoubi, Davide Fossati, Barbara Di Eugenio, Nick Green, and Lin Chen. Predicting students' performance and problem solving behavior from iList log data. *ICCE 2013, 21st International Conference on Computers in Education*. Bali, Indonesia, November 2013.
17. Barbara Di Eugenio, Lin Chen, Nick Green, Davide Fossati, and Omar AlZoubi. Worked out examples in computer science tutoring. *AIED 2013, 16th International Conference on Artificial Intelligence in Education*. Memphis, TN, July 2013. Short paper.
18. Jaime Spacco, Davide Fossati, Kelly Rivers, and John Stamper. Towards improving programming habits to create better computer science course outcomes. *ITICSE 2013, 18th ACM International Conference on Innovation and Technology in Computer Science Education*. Canterbury, UK, July 2013.
19. Lin Chen, Barbara Di Eugenio, Davide Fossati, Stellan Ohlsson and David Cosejo. Exploring Effective Dialogue Act Sequences in One-on-one Computer Science Tutoring Dialogues. *ACL-HLT 2011, The 49th Annual Meeting of the Association for Computational Linguistics, 6th Workshop on Innovative Use of NLP for Building Educational Applications*. Portland, OR. June 2011.
20. Davide Fossati and Mark Guzdial. The Use of Evidence in the Change Making process of Computer Science educators. *SIGCSE 2011, the 42nd ACM Technical Symposium on Computer Science Education*. Dallas, TX. March 2011.
21. Davide Fossati, Barbara Di Eugenio, Stellan Ohlsson, Christopher Brown, and Lin Chen. Generating proactive feedback to help students stay on track. *ITS 2010, The 10th International Conference on Intelligent Tutoring Systems*. Pittsburgh, PA. June 2010. Short paper.
22. Davide Fossati, Barbara Di Eugenio, Stellan Ohlsson, Christopher Brown, Lin Chen, and David Cosejo. I learn from you, you learn from me: How to make iList learn from students. *AIED 2009, The 14th International Conference on Artificial Intelligence in Education*. Brighton, UK. July 2009.
23. Barbara Di Eugenio, Davide Fossati, Stellan Ohlsson, and David Cosejo. Towards explaining effective tutorial dialogues. *CogSci 2009, The Annual Meeting of the Cognitive Science Society*. Amsterdam, The Netherlands. July 2009.
24. Davide Fossati, Barbara Di Eugenio, Christopher Brown, and Stellan Ohlsson. Learning Linked Lists: Experiments with the iList System. *ITS 2008, The 9th International Conference on Intelligent Tutoring Systems*. Montreal, Canada. June 2008. **Nominated for best paper award.**
25. Davide Fossati. The role of positive feedback in Intelligent Tutoring Systems. *ACL 2008, The 46th Annual Meeting of the Association for Computational Linguistics, Student Research Workshop*. Columbus, OH. June 2008.
26. Xin Lu, Barbara Di Eugenio, Stellan Ohlsson, and Davide Fossati. Simple but effective feedback generation to tutor abstract problem solving. *INLG 2008, 5th International Natural Language Generation Conference*. Salt Fork, Ohio. June 2008.
27. Davide Fossati and Barbara Di Eugenio. I saw TREE trees in the park: How to correct real-word spelling mistakes. *LREC 2008, Sixth International Conference on Language Resources and Evaluation*. Marrakech, Morocco. May 2008.
28. Stellan Ohlsson, Barbara Di Eugenio, Bettina Chow, Davide Fossati, Xin Lu, and Trina C. Kershaw. Beyond the code-and-count analysis of tutoring dialogues. *AIED 2007, The 13th International Conference on Artificial Intelligence in Education*. Marina Del Rey, CA. July 2007.
29. Davide Fossati and Barbara Di Eugenio. A mixed trigrams approach for context sensitive spell checking. *In CICLing-2007, Eighth International Conference on Intelligent Text Processing and Computational Linguistics*. Mexico City, Mexico. February 2007.
30. Davide Fossati, Gabriele Ghidoni, Barbara Di Eugenio, Isabel Cruz, Huiyong Xiao, and Rajen Subba. The problem of ontology alignment on the web: A first report. *EACL 2006, 11th conference of the European Association of Computational Linguistics, Workshop on Web as Corpus*. Trento, Italy. April 2006.

31. Barbara Di Eugenio, Davide Fossati, Dan Yu, Susan Haller, and Michael Glass. Natural language generation for intelligent tutoring systems: A case study. *AIED 2005, Artificial Intelligence in Education*. Amsterdam, The Netherlands. July 2005. **Nominated for best paper award.**
32. Barbara Di Eugenio, Davide Fossati, Dan Yu, Susan Haller, and Michael Glass. Aggregation improves learning: Experiments in natural language generation for intelligent tutoring systems. *ACL 2005, The 43rd annual meeting of the Association of Computational Linguistics*. Ann Arbor, MI. June 2005.

Theses

33. Davide Fossati. Automatic Modeling of Procedural Knowledge and Feedback Generation in a Computer Science Tutoring System. *PhD thesis, University of Illinois at Chicago, 2009.*
34. Davide Fossati. DIAG-NLP: Improving Intelligent Tutoring Systems with Natural Language Generation Technology. *Master's thesis, University of Illinois at Chicago, 2003.*

GRANTS AND AWARDS

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| 2012 - 2015 | Intelligent Learning Environments for Computer Science Undergraduate Education. Qatar National Research Fund, NPRP 5-939-1-155. Funded amount: \$1,037,149. |
| 2011 | A system for intelligent assessment in introductory Computer Science courses. Qatar Foundation, Seed Research Project 28221. Funded amount: \$99,808. |
| 2009 - 2010 | Computing Innovation Fellows Award, sponsored by the Computing Research Association, the Computing Community Consortium, and the National Science Foundation. <i>http://cifellows.org</i> |
| 2009 | 50 for the Future Award, Illinois Technology Foundation. Honoring Illinois' most promising technology students. <i>http://www.50forthefuture.org</i> |
| 2009 | Chancellor's Student Service and Leadership Award, University of Illinois at Chicago. |
| 2008 - 2009 | Dean's Scholar Award and Fellowship, Graduate College, University of Illinois at Chicago. |
| 2008 | Leadership and Service Award, Computer Science, University of Illinois at Chicago. |
| 2007 - 2008 | As an officer of Engineers Without Borders, I contributed to the achievement of the Student Organization of the Year Award (2007) and a formal recognition from the University of Illinois Board of Trustees (2008). |
| 2007 | Chancellor's Student Service Award, University of Illinois at Chicago. |
| 2006 | Outstanding Teaching Assistant Award, Computer Science, University of Illinois at Chicago. |

INVITED TALKS

1. October 23rd, 2014. Plenary speaker at ISCE-NCITE 2014, The 1st International Symposium on Computing for Education and 12th National Conference in Information Technology Education, Boracay, Philippines. *Learning Computer Science with iList and ChiQat-Tutor.*
2. May 15th, 2014. University of San Francisco, San Francisco, CA. *Automatic Modeling of Procedural Knowledge and Feedback Generation in a Tutoring System for Computer Science.*
3. March 6th, 2014. University of Canterbury, Christchurch, New Zealand. *Automatic Modeling of Procedural Knowledge and Feedback Generation in a Tutoring System for Computer Science.*
4. March 3rd, 2014. Unitec Institute of Technology, Auckland, New Zealand. *Automatic Modeling of Procedural Knowledge and Feedback Generation in a Tutoring System for Computer Science.*
5. June 22nd, 2011. Politecnico di Milano, Italy. *Automatic Modeling of Procedural Knowledge and Feedback Generation in a Tutoring System for Computer Science.*
6. August 18th, 2010. University of British Columbia, Vancouver, Canada. *Automatic Modeling of Procedural Knowledge and Feedback Generation in a Tutoring System for Computer Science.*

7. May 7th, 2010. University of Illinois at Chicago, Chicago, IL. *The use of intuition and evidence in the decision process of Computer Science educators.*
8. April 18th, 2010. Carnegie Mellon University, Doha, Qatar. *Media Computation: A Contextualized Approach to Teaching and Learning Introductory Computer Science.*
9. March 23rd, 2010. Carnegie Mellon University, Pittsburgh, PA. *Teaching and Research in Educational Technology: A Sustainable Synergy.*
10. November 20th, 2009. Emory University, Atlanta, GA. *Automatic Modeling of Procedural Knowledge and Feedback Generation in a Tutoring System for Computer Science.*
11. October 23rd, 2009. Georgia State University, Atlanta, GA. *Automatic Modeling of Procedural Knowledge and Feedback Generation in a Tutoring System for Computer Science.*
12. September 30th, 2009. Columbus State University, Columbus, GA. *Automatic Modeling of Procedural Knowledge and Feedback Generation in a Tutoring System for Computer Science.*
13. March 25th, 2009. Worcester Polytechnic Institute, Worcester, MA. *I learn from you, you learn from me: How to make iList learn from students.*
14. March 18th, 2009. California State University at Fullerton, Fullerton, CA. *Learning and Teaching in the 21st Century: From Intelligent Tutoring Systems to Intelligent Assessment.*
15. January 21st, 2009. Department of Psychology, University of Illinois at Chicago, Chicago, IL. *I learn from you, you learn from me: How to make iList learn from students.*
16. February 27th, 2008. Department of Psychology, University of Illinois at Chicago, Chicago, IL. *Subjective and objective evaluation of feedback messages: Experiments with the iList System*
17. March 8th, 2006. University of Chicago, Chicago, IL. *Automatic ontology mapping from text documents.*

VOLUNTEER, SERVICE, AND OTHER ACTIVITIES

Professional Service

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| 2015 | Member of the Institutional Review Board (IRB), Carnegie Mellon University in Qatar |
| 2012 - 2015 | Chair of the Computer Science Seminars Committee, Carnegie Mellon University in Qatar |
| 2011 - 2015 | Member of the Academic Review Board (ARB), Carnegie Mellon University in Qatar |
| 2011 - 2012 | Member of the Events and Outreach Committee, Carnegie Mellon University in Qatar |

Reviewing

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| 2016 | Reviewer for IJAIED: International Journal of Artificial Intelligence in Education. |
| 2016 | Reviewer for JEDM, Journal of Educational Data Mining. |
| 2016 | Reviewer for ACM UMAP 2016, 24th Conference on User Modeling, Adaptation and Personalization. |
| 2016 | Reviewer for ITS 2016, The 13th International Conference on Intelligent Tutoring Systems. |
| 2016 | Reviewer for EDM 2016, 9th International Conference on Educational Data Mining. |
| 2016 | Reviewer for CSEDU 2016, 8th International Conference on Computer Supported Education. |
| 2015 | Reviewer for IJAIED: International Journal of Artificial Intelligence in Education. |
| 2015 | Reviewer for LREV, Journal of Language Resources and Evaluation. |
| 2015 | Reviewer for JEDM, Journal of Educational Data Mining. |
| 2015 | Reviewer for EDM 2015, 8th International Conference on Educational Data Mining. |
| 2015 | Reviewer for AIED 2015, 17th International Conference on Artificial Intelligence in Education. |

2015 Reviewer for CSEDU 2015, 7th International Conference on Computer Supported Education.

2014 Reviewer for IEEE-TLT: Transactions on Learning Technologies.

2014 Reviewer for JEDM, Journal of Educational Data Mining.

2014 Reviewer for AIEDCS 2014, 2nd Workshop on Artificial Intelligence for Computer Science Education.

2014 Reviewer for ITS 2014, The 12th International Conference on Intelligent Tutoring Systems.

2013 Reviewer for IEEE-TLT: Transactions on Learning Technologies.

2013 Reviewer for CSEDU 2014, The 6th International Conference on Computer Supported Education.

2013 Reviewer for IJAIED: International Journal of Artificial Intelligence in Education.

2013 Co-chair of EDM 2013 YRT, Young Researcher Track at the 6th International Conference on Educational Data Mining.

2013 Reviewer for AIED-FFILE 2013, AIED Workshop on Formative Feedback in Intelligent Learning Environments.

2013 Reviewer for AIED-CS 2013, AIED Workshop on Artificial Intelligence for Computer Science Education.

2013 Reviewer for EDM 2013, The 6th International Conference on Educational Data Mining.

2012 Reviewer for EDM 2012, The 5th International Conference on Educational Data Mining.

2012 Reviewer for CSEDU 2012, The 4th International Conference on Computer Supported Education.

2011 Reviewer for a chapter in "Smart Innovation, Systems and Technologies" book series, Springer.

2011 Reviewer for EDM 2011, The 4th International Conference on Educational Data Mining.

2010 Reviewer for SIGCSE 2011, the 42nd ACM Technical Symposium on Computer Science Education.

2010 Reviewer for ECTEL 2010, Fifth European Conference on Technology Enhanced Learning.

2010 Reviewer for TOCE, The ACM Transactions on Computing Education.

2010 Judge for the 2010 Georgia Tech Research and Innovation Conference.

2010 Reviewer for NAACL-HLT 2010, the 2010 Conference of the North American Chapter of the Association for Computational Linguistics - Human Language Technologies.

2009 Reviewer for the Journal of Educational Data Mining.

2009 Reviewer for AIED 2009, International Conference on Artificial Intelligence in Education.

2009 Reviewer for a chapter in the book "Intelligent tutoring systems in E-Learning Environments: Design, Implementation and Evaluation" (Slavomir Stankov, Editor).

2008 Judge for the 2008 Chicago Public Schools Student Science Fair.

2005 - 2007 Reviewer for CICLEing-2006, CICLEing-2007, and CICLEing-2008: International Conferences on Intelligent Text Processing and Computational Linguistics.

Leadership

2007 - 2009 Treasurer, Graduate Student Council, University of Illinois at Chicago.

2006 - 2009 Vice-President and President, Computer Science Graduate Student Association, University of Illinois at Chicago.

2005 - 2008 Member and Treasurer (2006 - 2008), Engineers Without Borders, University of Illinois at Chicago student chapter.

Other

- 2008 Rock climbing instructor at the Student Recreation Facility, University of Illinois at Chicago.
- 2005 Italian as a Second Language instructor at the Shrine of our Lady of Pompeii, Chicago.
- 1993 - 2001 Guitar teacher for children and teenagers. Educator in summer programs for children and teenagers. Private tutor in mathematics, physics, and chemistry for high school students.
- 1992 - Present Instrument player, singer, and music composer. Entry-level choir director.

REFERENCES

- Dr. Barbara Di Eugenio**
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Web: <http://www.cs.uic.edu/~bdieugen/>
- Dr. Kemal Oflazer**
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Associate Dean for Research,
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- Dr. Selma Limam Mansar**
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- Dr. Martha W. Evens**
*Professor Emerita,
Research Professor*
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Web: <http://www.cs.iit.edu/~martha/>