University Academic Curriculum Vitae

Personal information

Ilenia Fronza
Place and date of birth: Tre [illegible]
Nationality: [illegible]
Address (resident): [illegible]
Telephone [illegible]
- Office: [illegible]

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Education since leaving school

- 2004, Bachelor degree in Mathematics (Class 32 of Mathematical Sciences degrees), University of Trento, Italy
- 2006, Master of Science in Mathematics (Class 45/S of Mathematical Sciences degrees), University of Trento, Italy
- 2007, Second Level Master in Computational and Systems Biology, The Microsoft Research Centre for Computational and Systems Biology – University of Trento, Italy
- 2012, PhD in Computer Science, Free University of Bozen-Bolzano, Italy

Present appointment

- Researcher with fixed term contract
- April 2011 – March 2017
- Free University of Bozen-Bolzano, Faculty of Computer Science
- Research interests: Software analytics, with a focus on software development processes, web and mobile contexts, embedded systems, and its implications on the area of human machine interaction; educational aspects of software engineering with a focus on computational thinking and human machine interaction.
- 100 hours of teaching per year.
- Coordinator of Faculty activities in local schools, appointed in March 2015.

Professional experience

Chronological list of all previous employments (each with job title, starting and finishing dates, level, employer, responsibilities)

From / to	Job title	Name of academic Institution	Academic level	Responsibilities
Nov. 2006 / Dec. 2006	Research assistant	The Microsoft Research Centre for Computational and Systems Biology, Trento, Italy	/	Solving a system of Master Equations for parallel chemical interactions
Nov. 2007 / Dec. 2007	Research assistant	Free University of Bozen-Bolzano, Faculty of Computer Science	/	Analisi di flussi di eventi per la modellazione di processi di business
April 2011 to now	Researcher with fixed term contract	Free University of Bozen-Bolzano, Faculty of Computer Science	Junior researcher	Architetture di servizi

Experience in academic teaching

- *title of courses given last 5 years, name of University/Institute, subject area, academic level (under-/post-graduate / PhD), results of evaluations (full details in appendix)*
- *Summary of significant personal achievements in teaching*
- *Postgraduate supervision (PhD level): number of students supervised in the last five years with subject areas*

Lecturer at Free University of Bozen-Bolzano, Faculty of Computer Science:

- Software Engineering and Software Project
  - A.Y. 11/12, 12/13, 13/14
  - ING-INF/05
  - Bachelor in Computer Science and Engineering (BSc)
- Software Engineering (A.Y. 14/15, 15/16)
  - A.Y. 14/15, 15/16
  - SSD: ING-INF/05
  - Bachelor in Computer Science and Engineering (BSc)
- Project and Team Work Management
  - A.Y. 14/15
  - SSD: M-FIL/02
  - Course of Bachelor in Computer Science and Engineering (BSc)
- Project Management and Professional Ethics
  - A.Y. 15/16
  - SSD: M-FIL/02
  - Bachelor in Computer Science and Engineering (BSc)

Lecturer at Free University of Bozen-Bolzano, Faculty of Communication Sciences and Culture:

- Elementi di Informatica per la Comunicazione
  - A.Y. 14/15
  - SSD: INF/01
  - Bachelor in Communication Sciences

Teaching Assistant at Free University of Bozen-Bolzano, Faculty of Computer Science:

- Functional and Logic Programming Languages
  - A.Y. 11/12, 12/13
  - SSD: INF/01 - ING-INF/05
  - Bachelor in Computer Science and Engineering (BSc)
- Machine Learning: Algorithms and Applications
  - A.Y. 10/11
  - SSD: INF/01
  - Bachelor in Computer Science and Engineering (BSc)
- Software Metrics
  - A.Y. 09/10, 10/11
  - SSD: ING-INF/05
  - Bachelor in Computer Science and Engineering (BSc)
- Analysis
  - A.Y. 10/11
  - SSD: MAT/05
  - Bachelor in Computer Science and Engineering (BSc)

- Supervisor for several Free Choice and Compulsory Projects
- Supervisor for several Bachelor and Master Thesis (Computer Science and PAS 42A sez. Italiana - in collaboration with Prof. G. Dodero).

Experience in teaching Computational Thinking

Since 2011 I have been teaching Computational Thinking in high / middle / elementary schools, during courses that were tailored to fit each school's needs. This means that multidisciplinary activities were designed specifically for each type and grade, in agreement with school teachers. In total, the following activities involved around 300 students of the Province of Bolzano:

- MobileDev (2014 and 2015), summer school for high school students on computational thinking and mobile development.
- Computational Thinking 2 CP course for High Schools (Bolzano, May 2015, 20 hours, Free University of Bozen-Bolzano and Liceo Pascoli).
- Teaching Computational Thinking courses for high/middle/elementary school (about 20/30 hours per year)
- ESF project TowArd ComputatIonal Thinking in the Schools (TACITuS – 2014/2015, high/middle/elementary school (about 150 hours).
- Computational Thinking during the ESF project Summer of IT Entrepreneurship (SITE – 2014/2016), 24 hours.
- Supervisor of a thesis of PAS 42A sez. Italiana - in collaboration with Prof. G. Dodero.
- Course "Teaching Computational Thinking using Scratch" for 20 teachers of primary schools, 15 hours, Provincia Autonoma di Bolzano - Dipartimento Istruzione e Formazione italiana - Area Pedagogica (2016).

The soundness and the potential applications of these activities has been supported by several publications about Computational Thinking in specialized, international conferences:

Fronza, I. and Gallo, D. 2016. "Der, die, o das?": il Computational Thinking nella didattica del tedesco L2/L3. DIDAMATICA 2016. Mondo Digitale*, vol. 15, no. 64, June 2016, pp. 1-10. ISSN: 1720-898X. URL:http://mondodigitale.aicanet.net/2016-3/DidamaticaSessioni/Didattica/paper_54.pdf * Every year, Mondo Digitale dedicates one issue to the Proceedings of DIDAMATICA, which are subject to a peer review process.
Fronza, I. and *Zanon, P.* Introduction of computational thinking in a hotel management school. DIDAMATICA 2015. Mondo Digitale*, vol. 14, June 2015, pages 28-34. ISSN: 1720-898X URL:http://mondodigitale.aicanet.net/2015-3/dida6/didamatica2015_submission_66.pdf * Every year, Mondo Digitale dedicates one issue to the Proceedings of DIDAMATICA, which are subject to a peer review process.
Fronza, I., El Ioini, N., Janes, A., Sillitti, A., Succi, G., and Corral Velazquez, L.R. "If I had to vote on this laboratory, I would give nine": Introduction on Computational Thinking in the lower secondary school: Results of the experience. DIDAMATICA 2014. Mondo Digitale*, vol. 13, no. 51, June 2014, pp. 757-765. ISSN: 1720898X, URL: http://mondodigitale.aicanet.net/2014-3/03_Computational_Thinking/03_14.pdf * Every year, Mondo Digitale dedicates one issue to the Proceedings of DIDAMATICA, which are subject to a peer review process.
Fronza, I. and Gallo, D. 2016. Towards mobile assisted language learning

based on Computational Thinking. International Conference on Web-based Learning (ICWL'16, 26-29 October, 2016, Rome, Italy), ICWL 2016, LNCS 10013, pp. 141-150, 2016, Springer International Publishing, ISBN 978-3-319-47439-7. DOI: 10.1007/978-3-319-47440-3_16. **Short-listed for ICWL 2016 "Best Paper award".**

Djurdjevic-Pahl, A., Pahl, C., Fronza, I., and El Ioini, N. A Pathway into Computational Thinking in Primary Schools. 1st Annual International Symposium on Emerging Technologies for Education (SETE'16, 26-29 October, 2016, Rome, Italy). To appear (November 2016).

Fronza, I., El Ioini, N., and Corral, L. 2016. Teaching Software Design Engineering Across the K-12 Curriculum: Using Visual Thinking and Computational Thinking. In *Proceedings of the 17th Annual Conference on Information Technology Education* (SIGITE '16). ACM, New York, NY, USA, 97-101. DOI: 10.1145/2978192.2978220.

Fronza, I., Corral, L., and El Ioini, N. Computational Thinking Through Mobile Programming: A Case Study in a Liberal Education Context. In Proceedings of the 13th International Conference on Mobile Web and Intelligent Information Systems (MobiWis'16, 22-24 August 2016, Vienna, Austria). To appear. Expected publication date: July 2016.

Fronza, I., El Ioini, N., and Corral, L. Blending Mobile Programming and Liberal Education in a Social-Economic High School. In Proceedings of the 3rd IEEE/ACM International Conference on Mobile Software Engineering and Systems (MobileSoft'16, May 16-17, 2016, Austin, TX, USA), pages 123-126. DOI: 10.1145/2897073.2897096. Expected publication date: June 2016.

Fronza, I., El Ioini, N., and Corral, L. 2015. Students Want to Create Apps: Leveraging Computational Thinking to Teach Mobile Software Development. In Proceedings of the 16th Annual Conference on Information Technology Education (SIGITE'15, September 30–October 3, 2015, Chicago, IL, USA). ACM, New York, NY, USA, pages 21-26. DOI: 10.1145/2808006.2808033

Submitted papers

Fronza, I., El Ioini, N., and Corral, L. Teaching Computational Thinking using the software development process: a framework for middle schools. ACM Transactions on Computing Education. Revision to be submitted in October 2016.

Abstract. Computational Thinking (CT) has been recognized as one of the fundamental skills that all graduates should acquire. To this end, motivational concerns need to be addressed in an early age of a child, as well as reaching students who do not consider themselves candidates for Science, Technology, Engineering, and Mathematics disciplines is also important if the broadest audience possible is to be engaged. This paper describes a framework for teaching and assessing CT in the context of K-12 education. The framework is based upon Agile software development, which relies on a set of principles and practices that can be mapped to the activities of CT. The paper presents as well the results of an experiment applying this framework in two sixth grade classes, with 42 participants in

total. Results show that it is possible to teach CT using a customized Agile software development process, after the addition of some tasks in order to allow students to explore, project and experience a potential product before using the software tools at hand. Moreover, according to teachers' feedback, students reached all the didactic objectives of the topics involved in the multidisciplinary activities. This can be taken as an indicator that it can be possible to use computing as a medium for teaching other subjects, beside Computer Science.

Fronza, I., El Ioini, N., and Corral, L. Adopting Robot Programming to Foster Computational Thinking. The 9th International Conference on Computer Supported Education (CSEDU 2017). Submitted in December 2016.

Abstract. In 2013, ACM recognized Computational Thinking (CT) as "one of the fundamental skills desired of all graduates". This means that, especially in libèral education environments, one of the challenges of CT courses is to motivate students who are discouraged upfront as they perceive programming as a difficult task. Applications that have tangible results typically stimulate students' interests. For instance, Educational Robotics (ER) is recognized as a tool to enhance higher order thinking skills and to facilitate teamwork. In this paper, we describe a course that has been designed to use ER (i.e., programming a maze-solving robot) to foster CT. Each activity of the course has been designed to foster specific CT skills to contribute to CT assessment, which remains a challenge in CT research. We report the results of an experiment, in a liberal education environment, with a total of 13 ninth graders (15.4% M, 84.6% F).

I am currently the principal investigator of a project of the Free University of Bolzano called "Computational Thinking Assisted Language Learning (ctALL)".

Publications about my activities:

- Il salto, "You are an open (face)book", June 2014
- Il salto, "Facile come creare un app", September 2015
- Alto Adige, "Programming starts in high schools", May 2015
- Academia, "Prepararsi al futuro con il pensiero computazionale", April 2016
- SÜDTIROL NEWS, "Uni: Auftakt der Informatik-Sommerschule", August 2015

I am a member of:

- SIGSOFT - ACM Special Interest Group on Software Engineering;
- SIGITE - ACM Special Interest Group of Information Technology Education.
- ACM-SIGITE "K-12 Outreach Committee". This existing committee is charged with creating a repository of K-12 outreach activities and programs

Other academic responsibilities

- *internal appointments to faculty and university boards*
- *external appointments at national and international level*
- *responsibilities for organizing conferences/seminars/exhibitions (place, duration, institute)*

- Coordinator of Faculty activities in local schools, appointed in March 2015. For example, this role requires to: handle constant contact with local schools and local School Administration; organize stages or courses for school students at the Faculty; meet teachers frequently in order to present the Faculty and possible cooperations; collect statistics about Faculty activities for schools.
- Organizing and teaching MobileDev 2014, MobileDev 2015, MobileDev

2016: summer school for high school students on computational thinking and mobile development, (Bolzano, 1 week in September - 30 hours, Free University of Bozen-Bolzano).

- Organizing and teaching Computational Thinking 2 CP course for High Schools (Bolzano, May 2015, 20 hours, Free University of Bozen-Bolzano and Liceo Pascoli).
- Organizing ASEW'11 and ASEW'12 - Alpine Software Engineering Workshop (Corvara (BZ), December 2011 and 2012, Free University of Bozen-Bolzano).
- Organizing CASE Summer School 2011 (Bolzano, July 2011, Free University of Bozen-Bolzano).
- Organizing the 4th International Symposium on Empirical Software Engineering and Measurement (ESEM'10, 16-17.09.2010, Bolzano).
- Responsible of Double degree Masters in Software Engineering (DDMSE) with University of Latvia.
- Supervision of several high school students during their stages at the Faculty of Computer Science, Free University of Bozen-Bolzano.
- First meetings for the organization of the event "Festival della narrazione scientifica", organized by the Autonomous Province of Bolzano.
- Speaker at "MINT day" for high schools (October 2015), organized by the Autonomous Province of Bolzano.

Memberships

Membership of academic or professional bodies (including membership of Editorial Boards of scientific publications; membership of scientific committees for international conferences)

- Program Committee of the International Workshop on Emerging Trends in Software Metrics 2011, WETSOM'11, co-located with ICSE 2011.
- Journal Reviewer for: Journal of Systems and Software (Elsevier), Information Retrieval Journal (Springer).
- Guest Editor, special issue on Making managerial dashboards meaningful, Cutter IT Journal, January 2013.
- Member of SIGSOFT, SIGITE.
- Member of the ACM-SIGITE "K-12 Outreach Committee". This existing committee is charged with creating a repository of K-12 outreach activities and programs

Research and scholarships

- *Summary of current research and scholarship*
- *Summary of research and scholarship during the previous five years*
- *Summary of significant achievements in research and scholarship*
- *Research grants and contracts*

Date granted	Award Holder(s)	Funding Body	Title	Amount received (€)
June 2016 – December 2016	Ilenia Fronza	Free University of Bozen-Bolzano	Computational Thinking Assisted Language Learning (ctALL)	7800.00
January – December 2016	Ilenia Fronza	Free University of Bozen-Bolzano	Green software for drone energy consumption optimization (green4drones)	8595.80
November 2013 – March 2015	Giancarlo Succi Ilenia Fronza (from November 2014)	European Social Fund	TowArd Computational Thinking in the Schools (TACITuS)	90890.30
January	Alberto Sillitti	European Social	Summer of IT	152950.00

2014 – May 2015	Ilenia Fronza (from November 2014)	Fund	Entrepreneurship (SITE)	
October 2012 – Ongoing	Barbara Russo	EACEA - the Education, Audiovisual and Culture Executive Agency (European Commission)	Joint MSc in Software Engineering (JMSE)	20000.00
August 2012 – August 2014	Alberto Sillitti	Autonomous Province of Bolzano	AQUAS	16000
March 2014 – March 2016	Giancarlo Succi	MIUR - PRIN	Integrated Design and Evolution of Adaptive Systems (IDEAS)	72000
	Barbara Russo	MOY Mediterranean Office of Youth - – didactic project	Double degree Master in Software Engineering (DDMSE)	

Publications

Publications over the last 10 years in chronological order within each category following the International Standard for bibliographic references with DOI whenever possible.

The publications about Computational Thinking are marked with *.

Journal papers in refereed academic journals

	di Bella, E., Fronza, I., Phaphoom, N., Sillitti, A., Succi, G., and Vlasenko, J. 2013. Pair Programming and Software Defects – A Large, Industrial Case Study, Software Engineering, IEEE Transactions on, vol.39, no.7, pp.930-953, July 2013. DOI: 10.1109/TSE.2012.68 Citation index. Scopus: 20, Google scholar: 37 Impact of Journal (2014): 1.614
	Fronza, I., Sillitti, A., Succi, G., Terho, M., and Vlasenko, J. 2013. Failure prediction based on log files using Random Indexing and Support Vector Machines. Journal of Systems and Software, Volume 86, Issue 1, January 2013, Pages 2-11. DOI: 10.1016/j.jss.2012.06.025 Citation index. Scopus: 28, Google Scholar: 37 Impact of Journal (2014): 1.352
*	Fronza, I. and Gallo, D. 2016. "Der, die, o das?": Il Computational Thinking nella didattica del tedesco L2/L3. Mondo Digitale*, vol. 15, no. 64, June 2016, pp. 1-10. ISSN: 1720-898X. URL:http://mondodigitale.aicanet.net/2016-3/DidamaticaSessioni/Didattica/paper_54.pdf Citation index. Scopus: NA, Google scholar: 0 * Every year, Mondo Digitale dedicates one issue to the Proceedings of DIDAMATICA, which are subject to a peer review process.
*	Fronza, I. and Zanon, P. 2015. Introduction of computational thinking in a hotel management school. Mondo Digitale*, vol. 14, June 2015, pages 28-34. ISSN: 1720-898X URL:http://mondodigitale.aicanet.net/2015-3/dida6/didamatica2015_submission_66.pdf

	Citation index. Scopus: 3, Google Scholar: 3 * Every year, Mondo Digitale dedicates one issue to the Proceedings of DIDAMATICA, which are subject to a peer review process.
*	Fronza, I., El Ioini, N., Janes, A., Sillitti, A., Succi, G., and Corral Velazquez, L.R. 2014. "If I had to vote on this laboratory, I would give nine": Introduction on Computational Thinking in the lower secondary school: Results of the experience, Mondo Digitale*, vol. 13, no. 51, June 2014, pp. 757-765. ISSN: 1720-898X, URL: http://mondodigitale.aicanet.net/2014-3/03_Computational_Thinking/03_14.pdf Citation index. Scopus: 6, Google scholar: 2 * Every year, Mondo Digitale dedicates one issue to the Proceedings of DIDAMATICA, which are subject to a peer review process.

Journal papers in professional journals

	Corral, L., Fronza, I., and El Ioini, N. 2015. The Future of Energy-Aware Software: The Case of Drones. Cutter IT Journal, Issue "What's Over the Technology Horizon", vol. 28, no. 8, pp. 19-23. ISSN: 1522-7383 Citation index. Scopus: 2, Google scholar: 1
	Fronza, I. 2013. Making Managerial Dashboards Meaningful: Opening statement. Cutter IT Journal, 26 (1), 2013, pp. 3-5. ISSN: 1522-7383. **Included in the five** Top Cutter IT Journal Articles for 2013. Citation index. Scopus: 0, Google scholar: 0

Conference papers

*	Fronza, I. and Gallo, D. 2016. Towards mobile assisted language learning based on Computational Thinking. International Conference on Web-based Learning (ICWL'16, 26-29 October, 2016, Rome, Italy), ICWL 2016, LNCS 10013, pp. 141-150, 2016, Springer International Publishing, ISBN 978-3-319-47439-7. DOI: 10.1007/978-3-319-47440-3_16. **Short-listed for ICWL 2016 "Best Paper award".** Citation index. Scopus: 0, Google scholar: 0
*	Djurdjevic-Pahl, A., Pahl, C., Fronza, I., and El Ioini, N. A Pathway into Computational Thinking in Primary Schools. 1st Annual International Symposium on Emerging Technologies for Education (SETE'16, 26-29 October, 2016, Rome, Italy). To appear (November 2016). Citation index. Scopus: NA, Google scholar: NA
*	Fronza, I., El Ioini, N., and Corral, L. 2016. Teaching Software Design Engineering Across the K-12 Curriculum: Using Visual Thinking and Computational Thinking. In *Proceedings of the 17th*

	Annual Conference on Information Technology Education (SIGITE '16). ACM, New York, NY, USA, 97-101. DOI: 10.1145/2978192.2978220. Citation index. Scopus: NA, Google scholar: 0
*	Fronza, I., Corral, L., and El Ioini, N. 2016. Computational Thinking Through Mobile Programming: A Case Study in a Liberal Education Context. In Proceedings of the 13th International Conference on Mobile Web and Intelligent Information Systems (MobiWIS'16, 22-24 August 2016, Vienna, Austria), M. Younas et al. (Eds.): MobiWIS 2016, LNCS 9847, pp. 67-80, 2016, Springer International Publishing. DOI: 10.1007/978-3-319-44215-0_6 Citation index. Scopus: 0, Google scholar: 0
	Corral, L., Fronza, I., El Ioini, N., and Ibershimi, A. 2016. A Measurement Tool to Track Drones Battery Consumption During Flights. In Proceedings of the 13th International Conference on Mobile Web and Intelligent Information Systems (MobiWIS'16, 22-24 August 2016, Vienna, Austria), M. Younas et al. (Eds.): MobiWIS 2016, LNCS 9847, pp. 334-344, 2016, Springer International Publishing. DOI: 10.1007/978-3-319-44215-0_28 Citation index. Scopus: 0, Google scholar: 0
	Corral, L., Fronza, I., El Ioini, N., Janes, A., and Plant, P. 2016. An Android Kernel Extension to Save Energy Resources without Impacting User Experience. In Proceedings of the 13th International Conference on Mobile Web and Intelligent Information Systems (MobiWIS'16, 22-24 August 2016, Vienna, Austria), M. Younas et al. (Eds.): MobiWIS 2016, LNCS 9847, pp. 3-17, 2016, Springer International Publishing. DOI: 10.1007/978-3-319-44215-0_1 **BEST PAPER AWARD.** Citation index. Scopus: 0, Google scholar: 0
	Fronza, I., Corral, L., El Ioini, N., and Ibershimi, A. 2016. Towards Optimization of Energy Consumption of Drones with Software-Based Flight Analysis. In Proceedings of the International Conference on Software Engineering and Knowledge Engineering (SEKE'16, San Francisco, USA, June 30-July 3, 2016). DOI: 10.18293/SEKE2016-050. Citation index. Scopus: 0, Google scholar: 0
	Fronza, I. and Trebeschi, S. 2016. Overview: ownership visualization word cloud. In Proceedings of the 18th International Conference on Enterprise Information Systems (ICEIS 2016, Rome, Italy, April 25-28, 2016), vol. 1, pages 405-412. DOI: 10.5220/0005753804050412 Citation index. Scopus: 0, Google scholar: NA
*	Fronza, I., El Ioini, N., and Corral, L. 2016. Blending Mobile Programming and Liberal Education in a Social-Economic High School. In *Proceedings of the International Conference on Mobile Software Engineering and Systems* (MOBILESoft '16). ACM, New York, NY, USA, 123-126. DOI: 10.1145/2897073.2897096.

	Citation index. Scopus: 0, Google scholar: 0
	Corral, L., Fronza, I., El Ioini, N., Janes, A., and Plant, P. 2016. Preserving Energy Resources using an Android Kernel Extension: a Case Study. Preserving energy resources using an Android kernel extension: a case study. In *Proceedings of the International Conference on Mobile Software Engineering and Systems* (MOBILESoft '16). ACM, New York, NY, USA, 23-24. DOI: 10.1145/2897073.2897124. Citation index. Scopus: 0, Google scholar: 0
	Corral, L. and Fronza, I. 2015. Better Code for Better Apps: A Study on Source Code Quality and Market Success of Android Applications. In Proceedings of the 2nd IEEE/ACM International Conference on Mobile Software Engineering and Systems (MobileSoft'15, May 16-17, 2015, Florence, Italy), pages 22-32. DOI: 10.1109/MobileSoft.2015.10 Citation index. Scopus: 0, Google scholar: 5
	Corral, L., Fronza, I., Gennari, R., and Melonio, A. 2015. From Game Design with Children to Game Development with University Students: What Issues Come Up?. In Proceedings of the 11th Biannual Conference on Italian SIGCHI Chapter (CHItaly'15, September 28–30, Rome, Italy), ACM, New York, NY, USA, pages 30-33. DOI: 10.1145/2808435.2808441 Citation index. Scopus: 0, Google scholar: 0
*	Fronza, I., El Ioini, N., and Corral, L. 2015. Students Want to Create Apps: Leveraging Computational Thinking to Teach Mobile Software Development. In Proceedings of the 16th Annual Conference on Information Technology Education (SIGITE'15, September 30–October 3, 2015, Chicago, IL, USA). ACM, New York, NY, USA, pages 21-26. DOI: 10.1145/2808006.2808033 Citation index. Scopus: 4, Google scholar: 5
	Fronza, I., Janes, A., Sillitti, A., Succi, G., and Trebeschi, S. 2013. Cooperation wordle using pre-attentive processing techniques. Tested for colorblind observers. The 6th International Workshop on Cooperative and Human Aspects of Software Engineering (CHASE'13, ICSE 2013 Workshop, May 2013, San Francisco, USA), pages 57-64. DOI: 10.1109/CHASE.2013.6614732 Citation index. Scopus: 6, Google scholar: 10
	Abrahamsson, P., Fronza, I., Moser, R., Pedrycz, W., and Vlasenko, J. 2011. Predicting Development Effort from User Stories. In Proceedings of the 5th International Symposium on Empirical Software Engineering (ESEM'11, Banff, Canada, 23-24 September, 2011). DOI: 10.1109/ESEM.2011.58 Citation index. Scopus: 8, Google scholar: 15
	Fronza, I., Sillitti, A., Succi, G., and Vlasenko, J. 2011. Failure

	Prediction based on Log Files Using the Cox Proportional Hazard Model. In Proceedings of the International Conference on Software Engineering and Knowledge Engineering (SEKE'11, Miami, USA, 7-9 July, 2011), pages 456-461. ISBN: 1-891706-29-2 URL:http://www.ksi.edu/seke/Proceedings/seke/SEKE2011_Proceedings.pdf. Citation index. Scopus: 4, Google scholar: 3
	Fronza, I., Sillitti, A., Succi, G., and Vlasenko, J. 2011. Toward a non-invasive control of applications. A biomedical approach to failure prediction. In Proceedings of the 14th International Conference on Enterprise Information System (ICEIS'11, Beijing, China, 8-11 June, 2011), pages 83-91. DOI: 10.5220/0003493000830091 Citation index. Scopus: 0, Google scholar: 0
	Abrahamsson, P., Fronza, I., and Vlasenko, J. 2011. Failure Prediction Using the Cox Proportional Hazard Model. In Proceedings of the 6th International Conference on Software and Data Technologies, (ICSOFT'11, Seville, Spain 18-21 July, 2011), pages 201-206. DOI: 10.5220/0003557802010206 Citation index. Scopus: 0, Google scholar: 0
	Fronza, I., and Vlasenko, J. 2011. Profiling the effort of novices in software development teams. An analysis using data collected non invasively. In Proceedings of the International Conference on Enterprise Information System (ICEIS'11, Beijing, China, 8-11 June, 2011), pages 392-395. DOI: 10.5220/0003505203920395 Citation index. Scopus: 0, Google scholar: 0
	Fronza, I., Sillitti, A., Succi, G., and Vlasenko, J. 2011. Understanding how Novices are Integrated in a Team Analysing their Tool Usage. In Proceedings of the International Conference on Software and Systems Process (ICSSP'11, Honolulu, Hawaii, 21-22 May, 2011), pages 204-207. DOI: 10.1145/1987875.1987910 Citation index. Scopus: 6, Google scholar: 8
	Abrahamsson, P., Fronza, I., and Vlasenko, J. 2011. Analyzing tool usage to understand to what extent experts change their activities when mentoring. In Proceedings of the International Workshop on Emerging Trends in Software Metrics (Wetsom'11, Honolulu, Hawaii, 24 May, 2011), pages 19-22. DOI: 10.1145/1985374.1985380, Citation index. Scopus: 0, Google scholar: 1
	Fronza, I., Sillitti, A., Succi, G., and Valsenko, J. 2011. Analysing the usage of tools in pair programming sessions. In Proceedings of the International Conference on eXtreme Programming and Agile Processes in Software Engineering (XP'11, Madrid, Spain, 10-13 May, 2011), pages 1-11. DOI: 10.1007/978-3-642-20677-1_1 Citation index. Scopus: 2, Google scholar: 4

	Fronza, I., Sillitti, A., and Succi, G. 2009. An Interpretation of the Results of the Analysis of Pair Programming During Novices Integration in a Team. In Proceedings of the 3rd International Symposium on Empirical Software Engineering (ESEM'09, Lake Buena Vista, Florida, 15-16 Oct., 2009), pages 225-235. DOI: 10.1109/ESEM.2009.5315998 Citation index. Scopus: 19, Google scholar: 28
	Fronza, I. and Succi, G. 2009. Modeling Spontaneous Pair Programming When New Developers Join a Team. In Proceedings of the 10th International Conference on eXtreme Programming and Agile Processes in Software Engineering (XP'09, Pula, Italy, 25-29 May, 2009), pages 242-244. DOI: 10.1007/978-3-642-01853-4_50 Citation index. Scopus: 6, Google scholar: 9

Submitted papers

*	Fronza, I., El Ioini, N., and Corral, L. Teaching Computational Thinking using the software development process: a framework for middle schools. ACM Transactions on Computing Education. Revision to be submitted in October 2016. Abstract. Computational Thinking (CT) has been recognized as one of the fundamental skills that all graduates should acquire. To this end, motivational concerns need to be addressed in an early age of a child, as well as reaching students who do not consider themselves candidates for Science, Technology, Engineering, and Mathematics disciplines is also important if the broadest audience possible is to be engaged. This paper describes a framework for teaching and assessing CT in the context of K-12 education. The framework is based upon Agile software development, which relies on a set of principles and practices that can be mapped to the activities of CT. The paper presents as well the results of an experiment applying this framework in two sixth grade classes, with 42 participants in total. Results show that it is possible to teach CT using a customized Agile software development process, after the addition of some tasks in order to allow students to explore, project and experience a potential product before using the software tools at hand. Moreover, according to teachers' feedback, students reached all the didactic objectives of the topics involved in the multidisciplinary activities. This can be taken as an indicator that it can be possible to use computing as a medium for teaching other subjects, beside Computer Science.
	Fronza, I. Failure Prediction From Log Files Using Random Indexing And SVM: An Internal, Dependent Replication. Journal of Decision Systems. Submitted in October 2016. Abstract. *Background.* The original study presents a method to predict failures based on log files. Random indexing is applied to abstract sequences of operations, and a weighted SVM classifies these sequences. *Aim.* This replication addresses the issues related to the external validity of the original study. *Method.* The experiment was repeated using a new, larger dataset, collected in the same company. Moreover, the experimental analysis was extended to analyze the effect on performance of the percentage of failures. *Results.* This replication provides evidence of the reproducibility of the original study and, overall, confirms its results. The approach is shown to provide better results for applications with percentage of failures in the same range of those in the original study. *Conclusions.* This replication gives evidence of the reproducibility of the method, and confirms its applicability on skewed datasets.

*	Fronza, I., El Ioini, N., and Corral, L. Adopting Robot Programming to Foster Computational Thinking. The 9th International Conference on Computer Supported Education (CSEDU 2017). Submitted in December 2016. Abstract. In 2013, ACM recognized Computational Thinking (CT) as "one of the fundamental skills desired of all graduates". This means that, especially in liberal education environments, one of the challenges of CT courses is to motivate students who are discouraged upfront as they perceive programming as a difficult task. Applications that have tangible results typically stimulate students' interests. For instance, Educational Robotics (ER) is recognized as a tool to enhance higher order thinking skills and to facilitate teamwork. In this paper, we describe a course that has been designed to use ER (i.e., programming a maze-solving robot) to foster CT. Each activity of the course has been designed to foster specific CT skills to contribute to CT assessment, which remains a challenge in CT research. We report the results of an experiment, in a liberal education environment, with a total of 13 ninth graders (15.4% M, 84.6% F).
	Corral, L., Fronza, I., and El Ioini, N. The Incursion of Drones as Object of Study in Energy-Aware Software Engineering. The 19th International Conference on Enterprise Information Systems (ICEIS 2017). Submitted in December 2016. Abstract. As drones expand their ability to perform longer and more complex tasks, one of the first concerns that rise is their capacity to perform those tasks in a reliable way. Reliability can be understood from different aspects: the ability of the drone to perform accurately, safely and autonomously. In this paper, we focus on understanding the current efforts to ensure the last quality, autonomy, from the point of view of energy-awareness for drone systems. It emerges that drones as object of study in energy aware Software Engineering is still an emerging, unexplored area, which requires to learn from advances and experimentation in other mobile and ubiquitous devices like cellular phones or tablets. Still, it is required to understand the opportunities and limitations of drones as computational targets. A research agenda should be set and followed to leverage software as an opportunity to foster drones as energy-aware devices.

Publications about the applicant

Articles published by others in magazines, etc. about the applicant or his/her projects

- Il salto, "You are an open (face)book", June 2014
- Il salto, "Facile come creare un app", September 2015
- Alto Adige, "Programming starts in high schools", May 2015
- Academia, "Prepararsi al futuro con il pensiero computazionale", April 2016
- SÜDTIROL NEWS, "Uni: Auftakt der Informatik-Sommerschule", August 2015

Further data

Presentations at scientific conferences over past 3 years (invited or selected, keynote, nature and status of conference)

- 18th International Conference on Enterprise Information Systems (ICEIS'16, Rome, Italy, April 25-28, 2016), selected
- DIDAMATICA 2016 (Udine, Italy, April 19-21, 2016), selected
- 16th Annual Conference on Information Technology Education (SIGITE'15, September 30–October 3, 2015, Chicago, IL, USA), selected

Entrepreneurship

Spin-offs, patents and entrepreneurship

Patent – with Nokia Finland.
Title: System and method for determining context
Description: The invention relates to determining a context of a system so

that the system can be controlled or the context information be used in the system. The context of a system is described with tags or words that characterize e.g. the state of the system, the surroundings of the system and the state of the user. These tags are determined at multiple time instances. The tags are collected over a first time span and a second time span, and the two (or more) sets of tags are used to determine the context of the system. If the determination using the two sets gives a different result, that is, there is a large distance between the two derived contexts, it is determined that a change in context has occurred. Detecting the change in context can be used to control the system, e.g. by changing the applications presented to the user on the user interface, or by changing the state and/or priority of applications.
Inventors: Jukka Saarinen, Leo Karkkainen, Mikko Terho, Ilenia Fronza, Andrea Janes, Alberto Sillitti, Giancarlo Succi
Assignees: Jukka Saarinen, Leo Karkkainen, Mikko Terho, Ilenia Fronza, Andrea Janes, Alberto Sillitti, Giancarlo Succi
Publication number: US20150154285
Application number: 14/378,015

Language competence

Written and spoken competence in all languages according to CERF levels, Common European Reference Framework; append certificates wherever available

Italian, written and spoken: mother tongue
English, written and spoken: C1 (CAE) - certificate is appended
German, written and spoken: B2 (Goethe Zertifikat) - certificate is appended

The Autonomous Province of Bolzano bilingual certificate B level, Bescheinigung über Kenntnis der italienischen und der deutschen Sprache (Autonome Provinz Bozen – Südtitol) – certificate is appended

Date
11/01/2017

Signature