

Alberto Casagrande

Assistant Professor



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languages

italian mother tongue

english fluent

Profile

I am a computer scientist, and my interests include –but are not limited to– hybrid systems, formal verification, systems biology, and algorithms. Most of my works are theoretical, particularly those devoted to analyzing hybrid systems. Nevertheless, I love to establish new collaborations with groups working in the applicative domain to face real-world problems and propose unconventional solutions for them. To cite few examples, this attitude led me into the automotive field, where I collaborated with Magneti Marelli and STMicroelectronics as part of the PARADES (Project for Advanced Research of Architecture and Design of Electronic Systems) into the structural genomics, where I developed software (GAM) to integrate the genome drafts produced by two different assemblers, and into the physiology domain, where I implemented a brain speller that improves the spelling performance of locked-in subjects. I worked at Exelixis to develop event identification using the IMU of their main product, GPEX. I was part of a group at the University of Trieste that suggested a novel approach to ease the identification of respiratory asynchronies in mechanically ventilated patients. In recent years, I collaborated with Prof. Fabris and Prof. Girometti to develop formal tools based on the information theory for evaluating and comparing diagnostic exams. Moreover, I worked on SAPO, a software tool for analyzing discrete-time dynamical systems with polynomial dynamics. My approach to problem-solving goes from modeling to implementation, and when possible, I develop software adopting the most convenient programming language. My professional goal is to face new challenges and use my skills to help in their solutions.

Education

- 2003–2006 **PhD in Computer Science** Università degli Studi di Udine
Hybrid Systems: A First-Order Approach to Verification and Approximation Techniques
This thesis reduces the bounded reachability problem for hybrid automata whose continuous laws are expressed by inclusions to the decidability problem for first-order formulæ over the reals.
Supervisors: Prof. Alberto Policriti & Prof. Tiziano Villa
- 1996–2002 **Master ("Laurea quinquennale") in Computer Science** Università degli Studi di Udine
Problemi di Raggiungibilità per Automi Ibridi in italian
Identification of repeated and regulatory sequences in the grape wine genome. Algebraic approach to the model checking of hybrid automata. Compositional theory of hybrid automata.
Supervisors: Prof. Alberto Policriti & Prof. Tiziano Villa
Grade: 110/110 *cum laude*
- 2006–2008 **PostDoc** Dept. of Agricultural and Environmental Sciences, Università degli Studi di Udine
Identification of repeated and regulatory sequences in the grape wine genome. Algebraic approach to the model checking of hybrid automata. Compositional theory of hybrid automata.

Research Interests

Formal Verification, Model checking, Hybrid Systems, Bioinformatics, Set Theory, Dynamical Systems.

Experience

2023–	Università di Udine - Dip. di Matematica, Informatica e Fisica Assistant Professor (<i>Ricercatore confermato</i>) Area: <i>Computer Science, INF/01</i>	Udine, Italy
2017–2023	Università di Trieste - Dip. di Matematica e Geoscienze Assistant Professor (<i>Ricercatore confermato</i>) Area: <i>Computer Science, INF/01</i>	Trieste, Italy
2016–2017	Exelio S.r.l. Software Engineer	Udine, Italy
2013–2016	Università di Trieste - Dip. di Matematica e Geoscienze Assistant Professor (<i>Ricercatore confermato</i>) Area: <i>Computer Science, INF/01</i>	Trieste, Italy
2010–2013	Università di Trieste - Dip. di Matematica e Informatica Assistant Professor (<i>Ricercatore non confermato</i>) Area: <i>Computer Science, INF/01</i>	Trieste, Italy
2008–2010	University of Trieste - Dip. di Matematica e Informatica Assistant Professor (<i>Ricercatore non confermato</i>) Area: <i>Computer Science, INF/01</i>	Trieste, Italy
2006-2008	Università di Udine, Dip. di Scienze Agrarie e Ambientali Postdoctoral researcher Identification of repeated and regulatory sequences in the grape wine genome. Algebraic approach to the model checking of hybrid automata. Supervisor: <i>Prof. Michele Morgante</i>	Udine, Italy
3-4/2006	New York University Visiting Scholar Composition and synchronization of hybrid automata in systems biology.	New York, USA
2006-2011	Applied Genomic Institute Scientific consultant Development of algorithms and tools for the analysis and the assembly of genomic sequences.	Udine, Italia
2003-2005	PARADES GEIE Scientific consultant Development of algorithms and techniques for the verification and the synthesis of hybrid controllers in automotive applications.	Rome, Italia

Publications

Article

An information-oriented paradigm in evaluating accuracy and agreement in radiology

Casagrande, A., Fabris, F., and Girometti, R.

EUROPEAN RADIOLOGY EXPERIMENTAL 2023.7 (2023) pp. 1–7. 2023

Parameter synthesis of polynomial dynamical systems

Casagrande, A., Dang, T., Dorigo, L., Dreossi, T., Piazza, C., and Pippia, E.

Information and Computation 289 (2022) p. 104941. Elsevier, 2022

Fifty years of Shannon information theory in assessing the accuracy and agreement of diagnostic tests

Casagrande, A., Fabris, F., and Girometti, R.

Medical Biol. Eng. Comput. 60.4 (2022) pp. 941–955. Springer, 2022

The quest for Diophantine finite-fold-ness

Cantone, D., Casagrande, A., Fabris, F., and Omodeo, E.
Le Matematiche 76.1 (June 2021) pp. 133–160. 2021

Pressure-flow breath representation eases asynchrony identification in mechanically ventilated patients

Casagrande, A., Quintavalle, F., Lena, E., Fabris, F., and Lucangelo, U.

Journal of Clinical Monitoring and Computing (Dec. 2021). Springer Science and Business Media LLC, 2021

Beyond kappa: an informational index for diagnostic agreement in dichotomous and multivalued ordered-categorical ratings

Casagrande, A., Fabris, F., and Girometti, R.

Medical Biol. Eng. Comput. 58.12 (2020) pp. 3089–3099. 2020

An effective pressure-flow characterization of respiratory asynchronies in mechanical ventilation

Casagrande, A., Quintavalle, F., Fernandez, R., Blanch, L., Ferluga, M., Lena, E., Fabris, F., and Lucangelo, U.

Journal of Clinical Monitoring and Computing (Jan. 2020). Springer Science and Business Media LLC, 2020

PolyMorph: Increasing the Spelling Efficiency of P300 by Selection Matrix PolyMorphism and Sentence-Based Predictions

Casagrande, A., Jarmolowska, J., Turconi, M., Fabris, F., Busan, P., and Battaglini, P. P.

Int. J. Hum. Comput. Interaction 34.12 (2018) pp. 1085–1104. 2018

Is Hyper-extensionality Preservable Under Deletions of Graph Elements?

Casagrande, A., Piazza, C., and Policriti, A.

Electr. Notes Theor. Comput. Sci. 322 (2016) pp. 103–118. 2016

Unwinding biological systems

Casagrande, A. and Piazza, C.

Theoretical Computer Science 587.0 (2015) pp. 26–48. 2015

ϵ -Semantics computations on biological systems

Casagrande, A., Dreossi, T., Fabriková, J., and Piazza, C.

Inf. Comput. 236 (2014) pp. 35–51. 2014

Family Fingerprints: a Global Approach to Structural Classification

Casagrande, A. and Fabris, F.

J. Bioinformatics and Computational Biology 10.3 (2012). 2012

Hybrid Automata and Bisimulations

Casagrande, A.

Rendiconti dell'Istituto di Matematica dell'Universit'a di Trieste. An International Journal of Mathematics 42 (2010) pp. 147–163. 2010

A consensus list of microsatellite markers for olive genotyping

Baldoni, L., Cultrera, N., Mariotti, R., Ricciolini, C., Arcioni, S., Vendramin, G., Buonamici, A., Porceddu, A., Sarri, V., Ojeda, M., Trujillo, I., Rallo, L., Belaj, A., Perri, E., Salimonti, A., Muzzalupo, I., Casagrande, A., Lain, O., Messina, R., and Testolin, R.

Molecular Breeding 24.3 (Oct. 2009) pp. 213–231. 2009

Discrete Semantics for Hybrid Automata

Casagrande, A., Piazza, C., and Policriti, A.

Discrete Event Dynamic Systems 19.4 (2009) pp. 471–493. 2009

Inclusion dynamics hybrid automata

Casagrande, A., Piazza, C., Policriti, A., and Mishra, B.

Inf. Comput. 206.12 (2008) pp. 1394–1424. 2008

The grapevine genome sequence suggests ancestral hexaploidization in major angiosperm phyla

Jaillon, O., Aury, J., Noel, B., Policriti, A., Clepet, C., Casagrande, A., Choisne, N., Aubourg, S., Vitulo, N., Jubin, C., Vezzi, A., Legeai, F., Huguene, P., Dasilva, C., Horner, D., Mica, E., Jublot, D., Poulain, J., Bruyère, C., Billault, A., Segurens, B., Gouyvenoux, M., Ugarte, E., Cattonaro, F., Anthouard, V., Vico, V., Del Fabbro, C., Alaux, M., Di Gaspero, G., Dumas, V., Felice, N., Paillard, S., Juman, I., Moroldo,

M., Scalabrin, S., Canaguier, A., Le Clainche, I., Malacrida, G., Durand, E., Pesole, G., Laucou, V., Chatelet, P., Merdinoglu, D., Delledonne, M., Pezzotti, M., Lecharny, A., Scarpelli, C., Artiguenave, F., Pè, M., Valle, G., Morgante, M., Caboche, M., Adam-Blondon, A., Weissenbach, J., Quétier, F., and Wincker, P.

Nature 449.7161 (Sept. 2007) pp. 463–467. Nature Publishing Group, 2007

Conferences/Proceedings

Set-Based Invariants over Polynomial Systems

Casagrande, A., Cimatti, A., Dorigo, L., Piazza, C., and Tonetta, S.

Proceedings of the 38th Italian Conference on Computational Logic, Udine, Italy, June 21-23, 2023, 2023

Adaptive Directions for Bernstein-Based Polynomial Set Evolution

Casagrande, A. and Piazza, C.

Reachability Problems - 17th International Conference, RP 2023, Nice, France, October 11-13, 2023, Proceedings, 2023

Extending Information Agreement by Continuity

Casagrande, A., Fabris, F., and Girometti, R.

IEEE International Conference on Bioinformatics and Biomedicine, BIBM 2020, Virtual Event, South Korea, December 16-19, 2020, 2020

Does Every Recursively Enumerable Set Admit a Finite-Fold Diophantine Representation?

Cantone, D., Casagrande, A., Fabris, F., and Omodeo, E. G.

Proceedings of the 34th Italian Conference on Computational Logic, Trieste, Italy, June 19-21, 2019, 2019

On Perfect Matchings for some Bipartite Graphs

Casagrande, A., Di Cosmo, F., and Omodeo, E. G.

SETS@ABZ, 2018

Reasoning about connectivity without paths

Casagrande, A. and Omodeo, E. G.

Proceedings of the 15th Italian Conference on Theoretical Computer Science, Perugia, Italy, September 17-19, 2014. 2014

External Interactions on Hybrid Models of Biological Systems

Casagrande, A. and Piazza, C.

Formal Methods in Macro-Biology - First International Conference, FMMB 2014, Nouméa, New Caledonia, September 22-24, 2014. Proceedings, 2014

pyHybridAnalysis: A Package for Semantics Analysis of Hybrid Systems

Casagrande, A. and Dreossi, T.

2013 Euromicro Conference on Digital System Design, DSD 2013, Los Alamitos, CA, USA, September 4-6, 2013, 2013

Approximated Symbolic Computations over Hybrid Automata

Casagrande, A., Dreossi, T., and Piazza, C.

Proceedings Third International Workshop on Hybrid Autonomous Systems, HAS 2013, Rome, Italy, 17th March 2013. 2013

PolyMorph: A P300 Polymorphic Speller

Casagrande, A., Jarmolowska, J., Turconi, M., Fabris, F., and Battaglini, P. P.

Brain and Health Informatics - International Conference, BHI 2013, Maebashi, Japan, October 29-31, 2013. Proceedings, 2013

Hybrid Automata and ϵ -Analysis on a Neural Oscillator

Casagrande, A., Dreossi, T., and Piazza, C.

Proceedings First International Workshop on Hybrid Systems and Biology, HSB 2012, Newcastle Upon Tyne, UK, 3rd September 2012. 2012

Model Checking on Hybrid Automata

Casagrande, A. and Piazza, C.

15th Euromicro Conference on Digital System Design, DSD 2012, Cesme, Izmir, Turkey, September 5-8, 2012, 2012

SCOP family fingerprints: An information theoretic approach to structural classification of protein domains

Casagrande, A. and Fabris, F.

2011 IEEE International Conference on Bioinformatics and Biomedicine Workshops (BIBMW), Atlanta, GA, USA, November 12-15, 2011, 2011

GAM: Genomic Assemblies Merger: A Graph Based Method to Integrate Different Assemblies

Casagrande, A., Fabbro, C. D., Scalabrin, S., and Policriti, A.

2009 IEEE International Conference on Bioinformatics and Biomedicine, BIBM 2009, Washington, DC, USA, 1-4 November 2009, *Proceedings*, 2009

Discreteness, hybrid automata, and biology

Casagrande, A., Piazza, C., and Policriti, A.

Discrete Event Systems, 2008. WODES 2008. 9th International Workshop on, 2008

Decidable Compositions of O-Minimal Automata

Casagrande, A., Corvaja, P., Piazza, C., and Mishra, B.

Automated Technology for Verification and Analysis, 6th International Symposium, ATVA 2008, Seoul, Korea, October 20-23, 2008. *Proceedings*, 2008

Translating Time-Course Gene Expression Profiles into Semi-algebraic Hybrid Automata Via Dimensionality Reduction

Casagrande, A., Casey, K., Falchi, R., Piazza, C., Ruperti, B., Vizzotto, G., and Mishra, B.

Algebraic Biology, Second International Conference, AB 2007, Castle of Hagenberg, Austria, 7 2-4, 2007, *Proceedings*, 2007

Composing Semi-algebraic O-Minimal Automata

Casagrande, A., Corvaja, P., Piazza, C., and Mishra, B.

Hybrid Systems: Computation and Control, 10th International Workshop, HSCC 2007, Pisa, Italy, April 3-5, 2007, *Proceedings*, 2007

Ariadne: a Framework for Reachability Analysis of Hybrid Automata

Balluchi, A., Casagrande, A., Collins, P., Ferrari, A., Villa, T., and Sangiovanni-Vincentelli, A.

Proceedings of the 17th International Symposium on Mathematical Theory of Networks and Systems (MTNS 2006), 2006, Kyoto, Japan

Independent Dynamics Hybrid Automata in Systems Biology

Casagrande, A., Mysore, V., Piazza, C., and Mishra, B.

Proceedings of the First International Conference on Algebraic Biology (AB'05), 2005, Tokyo, Japan

Semi-Algebraic Constant Reset Hybrid Automata - SACoRe

Casagrande, A., Piazza, C., and Mishra, B.

Proceedings of the 44rd Conference on Decision and Control and European Control Conference (CDC-ECC'05), 2005, Seville, Spain

Improving Reachability Analysis of Hybrid Automata for Engine Control

Casagrande, A., Balluchi, A., Benvenuti, L., Policriti, A., Villa, T., and Sangiovanni-Vincentelli, A.

Proceedings of the 43rd Conference on Decision and Control (CDC'04), 2004, Paradise Island, Bahamas

Research Reports

Synchronized Product of Semi-Algebraic O-minimal Hybrid Automata

Casagrande, A., Corvaja, P., Piazza, C., and Mishra, B.

Tech. rep., 2006

The Importance of Being Bounded

Casagrande, A. and Piazza, C.

Tech. rep. 4, 2005

Semi-Algebraic Constant Reset Hybrid Automata - SACoRe

Casagrande, A., Piazza, C., and Mishra, B.

Tech. rep. 3, 2005

Patents

2018

Apparatus to Identify Respiratory Asynchronies in an Assisted Breathing Machine

European Patent EP3308819A1

An apparatus to identify possible respiratory asynchronies between the conditions of inspiration and expiration set by an assisted breathing machine and the activity of inspiration and expiration of a subject associated with the assisted breathing machine comprises detection devices to detect data relating to parameters of the air supplied and inspired by the assisted breathing machine, and a processing unit connected to the detection devices.

Referee Activities

I have reviewed papers submitted to more than 40 national and international conferences/workshops and to the following journals:

- Nonlinear Analysis: Hybrid Systems
- Discrete Event Dynamic Systems
- IEEE Transactions on Automatic Control (TAC)
- Information and Computation
- Theoretical Computer Science
- Automatica
- Journal of Logic and Computation

Departmental Positions

2018–2023

Delegato per la Mobilità Internazionale
Dept. of Mathematics and Geoscience
University of Trieste

Delegate for International Mobility

2018–2023

Consigliere del il Centro Linguistico di Ateneo (CLA)
Dept. of Mathematics and Geoscience
University of Trieste

Delegate at the University Language

Center (CLA)

2018–2023

Rappresentante presso il Centro Interdipartimentale per le Scienze e Tecnologie Digitali, Informatiche e Computazionali (STeDIC)
Dept. of Mathematics and Geoscience
University of Trieste

Representative at the Interdepartmental

Center for Digital, Computer and Computational Sciences and Technologies (STeDIC)

2018-2022

Componente della Commissione Infrastrutture del Progetto "Dipartimento di Eccellenza"
Dept. of Mathematics and Geoscience
University of Trieste

Member of the Infrastructure Commission of the "Department of Excellence" project

2018

Rappresentante presso il Centro Interdipartimentale per le Scienze Computazionali (CISC)
Dept. of Mathematics and Geoscience
University of Trieste

Representative at the Interdepartmental Center for Computational Sciences (CISC)

2016

Delegato per l'Orientamento in Uscita
Dept. of Mathematics and Geoscience
University of Trieste

Delegate for Outbound Orientation

Organization

- 2023 **Program committee**
38th Italian Conference on Computational Logic (CILC 2019)
21-23 June 2023, Udine, Italy
- 2019 **General Chair**
34th Italian Conference on Computational Logic (CILC 2019)
19-21 June 2019, Trieste, Italy
- 2017 **Program subcommittee**
20th Euromicro Conference on Digital System Design (DSD 2017)
Special Session on Design di Cyber-Physical Systems (DCPS)
August 30- September 1, 2017, Wien, Austria
- 2016 **Program subcommittee**
19th Euromicro Conference on Digital System Design (DSD 2016)
Special Session on Design di Cyber-Physical Systems (DCPS)
August 31-September 2, 2016, Limassol, Cyprus
- 2015 **Program subcommittee**
18th Euromicro Conference on Digital System Design (DSD 2015)
Special Session on Design di Cyber-Physical Systems (DCPS)
August 26-28, 2015, Funchal, Madeira, Portugal
- 2015 **Program committee**
30th Italian Conference on Computational Logic (CILC 2015)
July 1-3, 2015, Genova, Italy
- 2014 **Program subcommittee**
17th Euromicro Conference on Digital System Design (DSD 2014)
Special Session on Design di Cyber-Physical Systems (DCPS)
August 27-29, 2014, Verona, Italy
- 2013 **Program subcommittee**
16th Euromicro Conference on Digital System Design (DSD 2013)
Special Session on Design of Cyber-Physical Systems (DCPS)
September 4-6, 2013, Santander, Spain
- 2013 **Scientific committee**
Joint summer school 8th summer school on Biology, Information, and Computation (BCI 2013) and 3rd FVG summer school on Bioinformatics
September 9-13, 2013, Trieste, Italy
- 2013 **Program committee**
3rd Workshop on Hybrid Autonomous Systems (HAS 2013)
March 17, 2013, Rome, Italy
- 2012 **Program committee**
First International Workshop on Hybrid Systems and Biology (HSB 2012)
September 3, 2012, Newcastle upon Tyne, UK
- 2010 **Scientific committee**
6th summer school on Biology, Information, and Computation (BCI 2010)
September 20-24, 2010, Dobbiaco (BZ), Italy
- 2009 **Steering committee**
First workshop on Theory and Applications of Bisimulations (TAB 2009)
July 3, 2009, Gorizia, Italy
- 2009 **Organizing committee**
24th International Conference on Logic Programming (ICLP 2008)
December 9-13, 2008, Udine, Italy

- 2008 **Scientific committee**
5th summer school on Biology, Information, and Computation (BCI 2008)
September 8-13, 2010, Trieste, Italy
- 2004 **Program committee**
First Workshop on Information, Structure, and Complexity (GISC 2004)
September 24-24, 2004, Dobbiaco (BZ), Italy

Projects

- 2023- **NiRvAna: Noninterference and Reversibility Analysis in Private Blockchains** Progetto PRIN
As component of the University of Udine unit
- 2022-2023 **InSANE: Investigating Sparse Algorithms in the post von Neumann Era** Progetto GNCS
- 2021-2022 **ASyncLess** Progetto PoC - FVG
As software infrastructure designer and algorithm developer
- 2020-2021 **NoRMA: Non-monotonic Reasoning on Modern parallel Architectures** Progetto GNCS
As component of the University of Trieste unit
- 2019 **Logic Programming for early detection of pancreatic cancer** Progetto GNCS
As component of the University of Trieste unit
- 2014 **Learning specifications and robustness in signal analysis (with a case study related to health care)** FRA - Finanziamento per la Ricerca d'Ateneo
University of Trieste
- 2013 **Speciche insiemistiche eseguibili e loro verica formale** GNCS - INdAM Project
Set-based executable specifications and their formal verification
As part of the unit of the university of Trieste.
- 2012 **Speciche di algoritmi tramite strumenti basati sulla teoria degli insiemi** GNCS - INdAM Project
Algorithm specifications by using set theory tools
As part of the unit of the university of Trieste.
- 2007-2009 **Indagini su teoria e applicazioni delle bisimulazioni in logica modale e teoria della concorrenza** Vigoni Project
Theory and applications of bisimulations in modal logics and concurrency theory
As part of the unit of the university of Trieste.
- 2006-2009 **VIGNE/VIGNA. Grape genome sequencing initiative.** European Project
As consultant of the Istituto di Genomica Applicata (IGA).
- 2006-2007 **BISCA. Sistemi e calcoli di ispirazione biologica e loro applicazioni** PRIN Project
Biological Inspired Systems and Computations and their Applications (BISCA)
As part of the unit of the university of Udine.
- 2006 **BIOCHECK. Strumento per la simulazione e verifica di modelli biologici** FVG Regional Project
BIOCHECK. Tool for the simulation and verification of biological models
As part of the unit of the university of Udine.
- 2005-2007 **Algebraic and deduction methods in non-classical logic and their applications to Computer Science** INTAS Project
As part of the unit of the university of Udine.
- 2004-2008 **Hybrid Control - HYCON Network of Excellence** EU/IST FP6 Network of Excellence
As consultant of PARADES GEIE

- 2005-2006 **Vincoli e preferenze come formalismo unificante per l'analisi di sistemi informatici e la soluzione di problemi reali** PRIN Project
Constraints and preferences as unifying formalism for the analysis of information systems and the solution of real problems
 As part of the unit of the university of Udine.
- 2005 **Sviluppo di risolutori di vincoli e loro applicazioni in teoria dei codici e bioinformatica** GNCS-INdAM Project
Development of constraint solvers and their applications in code theory and bioinformatics
 As part of the unit of the university of Udine.
- 2004-2006 **SyBiLLA. Systems Biology: modellazione, linguaggi e analisi** PRIN Project
Systems Biology: modeLs, Languages, and Analysis (SyBiLLA)
 As part of the unit of the university of Udine.
- 2003-2004 **Formal verification, certification and model checking for reactive, concurrent, and embedded systems** FVG Regional Project
 As part of the unit of the university of Udine.
- 2003-2005 **IST No. IST-2001-33520 (Control and Computation)** European Project
 As consultant of PARADES GEIE.

Students

- 2020-2021 **Francesco Andreuzzi**
 Title: *BisPy: un pacchetto per il calcolo della massima bisimulazione in grafi diretti*
 Bachelor degree in "Ingegneria Informatica" (Computer Engineering)
 Dept. of Engineering and Architecture, University of Trieste, Trieste, Italy
- 2011-2012 **Fabio Della Gaspera**
 Title: *Cecità e Internet: Modalità di Accesso alle Informazioni On-Line per gli Utenti Non Vedenti*
 Bachelor degree in "Scienze della Comunicazione" (Communication Sciences)
 Faculty of Education, University of Trieste, Trieste, Italy
- 2011-2012 **Teo Mrnjavac**
 Title: *Listening Rooms: Design and Implementation of a Social Music Feature in the Tomahawk Music Player*
 Master degree in "Informatica" (Computer Science)
 Faculty of Mathematics, Physics and Natural Sciences, University of Trieste, Trieste, Italy
- 2010-2011 **David Skorjanc**
 Title: *Interfaccia Web per uno Strumento di Classificazione Proteica*
 Bachelor degree in "Informatica" (Computer Science)
 Faculty of Mathematics, Physics and Natural Sciences, University of Trieste, Trieste, Italy
- 2008-2009 **Dajana Mišković**
 Title: *Clustering genes by time series expression data*
 Bachelor degree in "Informatica" (Computer Science)
 Faculty of Mathematics, Physics and Natural Sciences, University of Trieste, Trieste, Italy
- 2008-2009 **Giulio Dudine**
 Title: *Realizzazione di un Sistema Informativo per il settore assicurativo dell'auto*
 Bachelor degree in "Informatica" (Computer Science)
 Faculty of Mathematics, Physics and Natural Sciences, University of Trieste, Trieste, Italy

Teaching

2023-2024	Matematica 1st year - bachelor degree in “ <i>Scienze e Tecnologie Alimentari</i> ” (Food Science and Technology) Dept. of agri-food, environmental and animal sciences, University of Udine, Udine, Italy	Mathematics
2022-2023	Programmazione Avanzata e Parallela 3rd year - bachelor degree in “ <i>Intelligenza Artificiale e Data Analytics</i> ” (Artificial Intelligence and Data Analytics) Dept. of Mathematics and Geosciences, University of Trieste, Trieste, Italy	Advanced and Parallel Programming
2021-2022	Fundamentals of Algorithms Master Degree in “ <i>Mathematics</i> ” Dept. of Mathematics and Geosciences, University of Trieste, Trieste, Italy	
2019-2021	Informatica 1st year - bachelor degree in “ <i>Matematica</i> ” (Mathematics) Dept. of Mathematics and Geosciences, University of Trieste, Trieste, Italy	Informatics
2018-2021	Algorithmic Design 1st year - master degree in “ <i>Data Science and Scientific Computing</i> ” Dept. of Mathematics and Geosciences, University of Trieste, Trieste, Italy	
2016	Algoritmi Avanzati 2nd year - master degree in “ <i>Matematica</i> ” (Mathematics) Dept. of Mathematics and Geosciences, University of Trieste, Trieste, Italy	Advanced Algorithms
2015-2016	Metodi Formali per l'Informatica 2nd year - master degree in “ <i>Matematica</i> ” (Mathematics) Dept. of Mathematics and Geosciences, University of Trieste, Trieste, Italy	Formal Methods in Computer Science
2015	Informatica Applicata 1st year - master degree in “ <i>Scienze della comunicazione pubblica, d'impresa e pubblicità</i> ” (Public, business, and advertising communication sciences) Dept. of Human Sciences, University of Trieste, Trieste, Italy	Applied Computer Science
2011-2015	Scienze Fisiche e Statistiche (Informatica) 1st year - bachelor degree in “ <i>Tecniche di Laboratorio Biomedico</i> ” (Biomedical Laboratory Techniques) Faculty of Medicine and Surgery, University of Trieste, Trieste, Italy	Physical Sciences and Statistics
2010-2014	Laboratorio di Programmazione 1st year - bachelor degree in “ <i>Ingegneria dell'informazione</i> ” (Information Technology Engineering) Faculty of Engineering, University of Trieste, Trieste, Italy	Computer Programming Lab
2010-2014	Informatica 1st year - bachelor degree in “ <i>Scienze del Servizio Sociale</i> ” (Social Sciences) Faculty of Education, University of Trieste, Trieste, Italy	Computer Science
2012-2014	Informatica Generale 1st year - bachelor degree in “ <i>Scienze della Comunicazione</i> ” (Communication Sciences) Faculty of Education, University of Trieste, Trieste, Italy	General Computer Science
2009	Algoritmi Avanzati 3 rd year - bachelor degree in “ <i>Informatica</i> ” (Computer Science) Faculty of Mathematics, Physics and Natural Sciences, University of Trieste, Trieste, Italy	Advanced Algorithms

2009

Complementi di Programmazione

Complements of Computer Programming

3rd year - bachelor degree in "Informatica" (Computer Science)

Faculty of Mathematics, Physics and Natural Sciences, University of Trieste,
Trieste, Italy

Software

Formal Verification

Sapo

<https://github.com/sapotools/sapo>

Sapo is a tool for the formal analysis of discrete-time polynomial dynamical systems.

webSapo

<https://github.com/LucaDorigo/webSapo>

webSapo is a web user interface for Sapo.

pyModelChecking

<https://github.com/albertocasagrande/pyModelChecking>

pyModelChecking is a simple Python model checking package.

BinaryDecisionDiagrams

<https://github.com/albertocasagrande/BinaryDecisionDiagrams>

An OBDD implementation for Julia.

Medical Applications

RACES

<https://github.com/albertocasagrande/RACES>

RACES is an Advanced Cancer Evolution Simulator. It supports cellular clone competition, spacial simulations, epigenetic mutations, copy-number variations, and mutational signature ruled SNV.

PolyMorph

<http://polymorph.units.it/>

A P300 predictive speller that exploits a knowledge base containing both words and sentences in order to suggest the most probable words and minimize the size of the selection matrix.

Proteomics

BLOspectrum Tools

<http://blospectrumtool.sourceforge.net>

A set of tools for the analysis and classification of protein domains in the SCOP database.

Statistics and Information-Theory

pyagree

<https://github.com/albertocasagrande/pyagree>

A simple easy-to-use Python package to compute some inter-rater agreement measures. Among the other measures this package provides an implementation for both the Information Agreement and the extension-by-continuity of Information Agreement coefficients.