

Curriculum vitae of Alessandro Dal Palù

Contacts

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Degrees

- Computer Science degree (Laurea = BS + MS), University of Verona, Italy, on 10th Jul 2002.
- Ph.D. in Computer Science, at University of Udine on 31th March 2006.

Current position

Associate professor at Parma University, Italy (since Oct 2014)
Dept. of Mathematical, Physical and Computer Sciences, University of Parma.

Research Interests

- Artificial Intelligence: Computational Logics, Constraint (Logic) Programming, Answer Set Programming.
- Explainable Artificial Intelligence
- Analysis of multi-dimensional medical images
- Bioinformatics
- Parallel computing, GPU computing and Big Data.

Curriculum Vitae et Studiorum

Jul 1997 I pursued High School Degree at "Liceo Scientifico Statale G.Fracastoro" in Verona with 60/60.

Sep 1997 I enrolled at University of Verona, for a Computer Science degree.

Sep 1997 – Jul 2002 Scholarship from the Municipality of Verona during my 5 years of University studies.

Aug 2000 Scholarship from "Esu" Verona, for a month of intensive English course at Hull University, UK.

Aug 2001 – Dec 2001 I begun a MS in Computer Science at New Mexico State University, Las Cruces, NM, Usa and collaborated for research on algorithms and data structures optimizations.

May and Jun 2002 Collaboration with Verona University for a project of remote robotic surgery.

10th Jul 2002 I received my Computer Science degree from the Faculty of "Scienze Matematiche Fisiche e Naturali", University of Verona, thesis title: *New optimal algorithms on pointer machines*, advisors: Prof. Roberto Giacobazzi, Prof. Agostino Dovier, Prof. Enrico Pontelli e Prof. Desh Ranjan. I received the grade 110/110 cum laude and a special mention from the committee for the outstanding curriculum.

Sep – Nov 2002 Research period at University of Parma, for integrating Constraint Logic Programming solvers over sets.

Jul – Nov 2002 Collaboration with University of Verona for a project to study the disposition of alarms to alert population in case of high tide in the town of Venice.

Nov 2002 I enrolled and received a 3 years scholarship for a Computer Science Ph.D. at University of Udine.

Apr 2003 – Sep 2004 I was granted a scholarship from the **European Social Fund**: "Misura D4" Miglioramento delle risorse umane nel settore della ricerca e sviluppo tecnologico.

Feb – Mar 2004 Research period in Jena, Germany, on bioinformatics and Constraint Logic Programming. During this period, I designed and implemented a new protein simulator in the framework of CLP over Finite Domains.

Aug – Dec 2004 Research at New Mexico State University, Las Cruces, NM, Usa, focusing on bioinformatics, parallelism and Constraint Logic Programming, e.g. I applied parallel constraint programming to solve protein structure prediction problems.

Dec 2005 Researcher position (assistant professor with tenure track) at University of Parma, Dept. of Mathematics.

March 2006 Final dissertation for Ph.D.

Spring semester 2011 Visiting Professor and research collaborator at New Mexico State University, USA

since Oct 2014 Associate professor position at University of Parma

since Jan 2017 Head of the Computer Science Bachelor Degree at Parma

Feb 2020 Designed and activated the new Masters degree in Computer Science at Parma starting from 2020/21

Awards

- 9th March 2007: "Marco Cadoli" Award given by GULP (Gruppo Ricercatori e Utenti Logic Programming) for **best Ph.D. thesis** on computational logics
- **Best paper** award at International Conference of Logic Programming 2010, *CLP-based protein fragment assembly*
- Prolog programming contest winner at International Conference on Logic Programming 2012 (Budapest).
- **Best practical impact paper** at CILC 2020 (Italian Conference on Logic programming) with the paper *An ASP approach for arteries classification in CT scans*

Editor

- Book chapter. Constraint Based Methods for Bioinformatics in Trends in Constraint Programming, Frederic Benhamou, Narendra Jussien and Barry O'Sullivan eds. (co-editor). ISBN: 9781905209972, 2007
- Constraints Journal, Special Issue on Constraint based methods for Bioinformatics (co-editor) Volume 13, Issue 1 (2008).
- Thematic series on Constraints and Bioinformatics, Algorithms for Molecular Biology (co-editor), since 2012.
- Guest associate editor of Frontiers in Bioinformatics, since jun 2022

Committees

- **Program co-chair of ICLP (International Conference on Logic Programming) 2018**
- Association of Logic Programming **Executive committee** 2014-2020.
- PC member of ICLP 2008/11/12/15/17 and publicity chair of ICLP 08.
- Co-Chair of *CP and Biology* Track of International Conference on Principles and Practice of Constraint Programming 2016
- Doctoral Consortium, ICLP10/11 (co-chair).
- Promoter of Workshop on Constraint Based Methods for Bioinformatics (2005-2018), co-chair in 2006/07/09/10/11/13/15/16/18/20.
- PC member of IJCAI11, 19,20.
- PC member of national conferences on Computational Logic and AI.

Funded academic projects

- FIRB 2003: Il riconoscimento molecolare nelle interazioni proteina-ligando, proteina-proteina e proteina superficie: sviluppo di approcci sperimentali e computazionali integrati per lo studio di sistemi di interesse farmaceutico (Approved March 31st 2005) — RBNE03B8KK
- INDAM GNCS 2005: *Sviluppo di risolutori di vincoli e loro applicazioni in teoria dei codici e bioinformatica*
- PRIN 2005: *Vincoli per la programmazione con insiemi, l'analisi di sistemi con automi, il ragionamento su intervalli e la bioinformatica* — 2005015491

- PRIN 2008 Innovative and multi-disciplinary approaches for constraint and preference reasoning. — 20089M932N
- INDAM GNCS 2010: *Tecniche innovative per la programmazione con vincoli in applicazioni strategiche*
- **National PI** of the INDAM GNCS 2011: *Nuova architettura parallela per l'esecuzione di Programmi Logici mediante General Purpose Graphic Processing Unit (GPGPU)*
- INDAM GNCS 2014: *CUD@ASP: sfruttare la potenza di calcolo delle GPU per il ragionamento automatico*
- INDAM GNCS 2015: *Constraint-Based Search using GPUs and applications to protein structure prediction*
- **National PI** of the INDAM GNCS 2016: *Programmazione logica per lo studio dell'evoluzione del genoma nel cancro*
- INDAM GNCS 2017: *DECORE - A DEClarative approach for Object REconstruction*
- **National PI** of the INDAM GNCS 2019: *Logic programming for early detection of pancreatic cancer*
- INDAM GNCS 2020: *Automazione del ragionamento non-monotono su moderne architetture parallele (NoRMA - Non-monotonic Reasoning on Modern parallel Architectures)*
- **PI** of the Postdoctoral research fellowship (funded by regional Emilia Romagna POR FSE 2014/2020) "Industry 4.0 Automatic control of robotic components for packaging lines" 30K Euro (12 months)
- **PI** of the Project proposal for Green innovation VI, National PON Research and Innovation: 3 year researcher position granted (2022-2024)
- INDAM GNCS 2022: *InSANE - Investigating Sparse Algorithms in the post von Neumann Era*. Funded by Institute for Applied Mathematics, Indam Italy (GNCS Project 2022 grant number CUP_E55F22000270001).

Funded industrial projects

- **PI** of the Industrial research grant 2019: utilizzo di strumenti innovativi per l'utilizzo di programmazione avanzate per l'elaborazione degli algoritmi specifici mediante programmazione CUDA. 17K Euro
- **PI** of the Industrial research grant 2020: Studio e ricerca di strumenti innovativi per l'applicazione dell'intelligenza artificiale e big data nella progettazione, uso e mantenimento predittivo di linee di produzione Industry 4.0. 35K Euro
- **PI** of the Industrial research grant 2021: Sviluppo di metodologie innovative di intelligenza artificiale e big data per la progettazione, funzionamento e manutenzione predittiva di linee di produzione Industry 4.0. 40K Euro
- **PI** of the Industrial research grant 2021: Studio, analisi architetture e prototipazione di un sistema elettronico di acquisizione, calcolo e misura ad alte prestazioni per l'analisi non distruttiva di materiale a base di fibre vegetali usando onde millimetriche. 150K Euro
- **PI** for the development of students careers analysis portal project 2021. 20K Euro
- **PI** of the Industrial research grant 2022: Sviluppo di metodologie innovative di intelligenza artificiale e big data per la progettazione e funzionamento di macchine di palettizzazione e avvolgitori di palette Industry 4.0. 40K Euro

Management and teaching

- 2021-today **Head of the CS Bachelor and Masters degrees**, Parma University
- 2020 **Promoted the creation of the new Masters degree in CS**, Parma
- 2017-2020 **Head of the CS Bachelor degree**, Parma
- Since 2017 Member of scientific committee for **High Performance Computing** of Parma
- 2014-2021 Coordinator of Parma Unit of **Infolife Laboratory** (CINI's Bioinformatics National Lab)
- 2018-2020 Departmental commission for International relationships (e.g., Erasmus, ...).
- 2011-2013 and Since 2020 Departmental commission for research evaluation (Math + CS area)
- A.Y. 02/03. T.A. for the class: C/C++ Programming for Mathematics and CS degree at University of Parma.
- A.Y. 03/04 – 05/06. T.A. for the class: Operating Systems for Biotechnology at University of Udine.

- A.Y. 05/06 – 08/09 . Computer Science, Biotechnology degree, University of Parma.
- A.Y. 10/11. Programming Lab, CS degree, University of Parma.
- A.Y. since 05/06 – 19/20. Operating Systems, CS degree, University of Parma.
- A.Y. since 14/15 – today. Systems architecture, CS degree, University of Parma.
- A.Y. since 18/19 – 20/21. Parallel programming and HPC, CS degree, University of Parma.
- A.Y. since 20/21 – today. Lab of Algorithms and Data Structures, CS degree, University of Parma.
- A.Y. 21/22. Constraint Programming, CS Master's degree, University of Parma.
- A.Y. 22/23. Declarative Programming, CS Master's degree, University of Parma.
- Advisor of several Bachelor/Master thesis
- PhD student M. Turchetto (UniPR, co-advisor) A general design for a scalable MPI-GPU Shallow Water Equations solver on a multi-resolution grid, March 2020
- PhD student F. Fabiano (UniUD, co-advisor), Planning while Believing to Know (Epistemic Logics), March 2022

School/PhD classes teaching

- Protein structure prediction methods (Doctoral school) (4-6/07/11, Sissa, TS).
- Exploring Life through Logic Programming CILC Summer School 2015
- PhD course *HPC: calcolo ad alte prestazioni*, 2017-2018, Parma

Publication list of Alessandro Dal Palù

References

- [1] E. Iotti, A. Dal Palù, G. Contesso, and F. Bertinelli. Substitute plastic film with kraft paper in automatic pallet wrapping: an ai pipeline. *AIxIA conference, to appear*, 2022.
- [2] F. Bertini, A. Dal Palù, F. Fabiano, and E. Iotti. Caring for xai. *CILC, CEUR Workshop Proceedings*, 3204:47 – 60, 2022.
- [3] F. Fabiano and A. Dal Palù. An asp approach for arteries classification in ct scans. *Journal of Logic and Computation*, 2022.
- [4] N. Cardobi, A. Dal Palù, F. Pedrini, A. Beleù, R. Nocini, R. De Robertis, A. Ruzzenente, R. Salvia, S. Montemezzi, and M. D’onofrio. An overview of artificial intelligence applications in liver and pancreatic imaging. *Cancers*, 13(9), 2021.
- [5] Massimiliano Turchetto, Alessandro Dal Palù, and Renato Vacondio. A general design for a scalable mpi-gpu multi-resolution 2d numerical solver. *IEEE Transactions on Parallel and Distributed Systems*, 31:1036–1047, May 2020.
- [6] F. Fabiano and A. Dal Palù. An asp approach for arteries classification in ct-scans. volume 2710, pages 312–326, 2020.
- [7] A. Dal Palù, P. Fodor, N. Saeedloei, and P. Tarau. Preface. volume 64, 2018.
- [8] A Ferrari, M D’Oria, R Vacondio, Alessandro Dal Palù, P Mignosa, and G Tanda. Discharge hydrograph estimation at upstream-ungauged sections by coupling a bayesian methodology and a 2-d gpu shallow water model. *Hydrology and Earth System Sciences*, 22:5299–5316, 2018.
- [9] Alessandro Dal Palù and Paul Tarau. Introduction to the 34-th international conference on logic programming special issue. *TPLP*, 18:296–300, 2018.
- [10] Alessandro Dal Palù, Agostino Dovier, and Andrea Formisano. 2d object reconstruction with asp. *CEUR Workshop Proceedings - CILC proceedings*, 2214:132–146, 2018.
- [11] Alessandro Dal Palù, Agostino Dovier, Andrea Formisano, and Enrico Pontelli. Asp applications in bio-informatics: A short tour. *KI - Künstliche Intelligenz*, Jun 2018.
- [12] Susanna Dazzi, Renato Vacondio, Alessandro Dal Palù, and Paolo Mignosa. A local time stepping algorithm for gpu-accelerated 2d shallow water models. *ADVANCES IN WATER RESOURCES*, 111:274–288, 2018.