University Academic Curriculum Vitae

Personal information   Name: Ozan Kahramanoğulları

Education since leaving school

- 1999, BSc Mathematics, Hacettepe University, Ankara, Turkey
- 2002, MSc Computer Science, TU Dresden, Germany
- 2006, PhD Computer Science, TU Dresden, Germany
  (Grant: "DFG Graduiertenkolleg 446" at the University of Leipzig)

Professional experience

From / to	Job title	Name of academic Institution	Academic level	responsibilities
Jul .2022–Jun.2025	Assistant Professor	Free University of Bozen-Bolzano	RTDa	Research (modelling, data analysis and automated reasoning), Teaching, and Administrative tasks
Jan 2020-Jun 2022	Vice President A.I. – Systems Biology	ThinkingNode Life Inc., San Diego, California, U.S.A.		Overseeing the development of a distributed A.I. system for drug target discovery and biomarker identification
Nov.2019–Dec.2020	Researcher	Department of Mathematics, University of Trento	Postdoc	Research (Modelling and data analysis)
Oct 2014–Sep 2019	Assistant Professor	Department of Mathematics, University of Trento	RTDa	Research (modelling, data analysis and automated reasoning), Teaching, and Administrative tasks
Sep2009 -Oct 2017	Researcher	The Microsoft Research – University of Trento Centre for Computational and Systems Biology		Research (Language design for modelling and applications)
Jun 2006–May 2009	Research Associate	Imperial College, London	Postdoc	Research (Language design for modelling and applications

Experience in academic teaching	• Assistant Professor (RTDa) 2022-2025, Faculty of Engineering, Free University of Bozen-Bolzano. Programming Project (undergraduate, English, 90 hours, advanced programming in Java, 2022-23), Reproducibility in Research (PhD, 10 hours, 2022-23), Data Visualization and Exploration (MSc, English, 60 hours, data visualization using R and Tidyverse, 2023-24, 2024-25), Introduction to Programming (BSc, English, 30 hours, exercises on programming in Java).
	• Assistant Professor (RTDa) 2014-2019, Department of Mathematics, University of Trento. Systems Biology (BSc, Italian), Modelling and Simulation of Biological Systems (MSc, English), Biological Networks, Biostatistics (MSc, English), Advanced Topics in Biomathematics (MSc, English). During this appointment, I had teaching responsibilities for 96 hours per year, a course for each semester, in contrast to 60 hours per year as foreseen by the contractual duties. This involved preparation, teaching, and evaluation of a course each semester.
	• Supervision of Mohamed Sabri Hafidi's PhD thesis, ongoing since 2022. Preliminary results published at the VLDB 2025.
	• Supervision of Arash Erami's MSc Thesis, 2025, Free University of Bolzano-Bozen, A Data Visualisation Tool for Interpreting Building Energy Simulation Results
	• Supervision of Lucia Maninetti's BSc Thesis, 2022-23, Free University of Bolzano-Bozen, A Relational Database Model for Storing and Querying Biological Trait Data.
	• Supervision of Elena Righetti's MSc thesis project, resulting in two journal publications. Grade: *cum laude*, 21.5.2021. Now a PhD student at The Microsoft Research - University of Trento COSBI.
	• Supervision of BSc thesis project of Andrea Giachino. Grade: *cum laude*, 26.9.2016. Now a PhD student at the Newcastle University without an MSc diploma.
	• Postgraduate supervision (PhD level): 2 students Cansu Uluseker - PhD Thesis, grade: *cum laude* (with honors), 15.10.2018. University of Trento, Dep. of Cellular, Comp. and Integrative Biology. Thesis: A systems and synthetic biology framework for regulatory systems. Now a researcher at the University of Birmingham.
	• Federico Reali - PhD Thesis, grade: *cum laude* (with honors), 24.3.2017. University of Trento, Department of Mathematics. Thesis: Dynamical models for diabetes: insights into insulin resistance and type 1 diabetes. Now a researcher at The Microsoft Research - University of Trento COSBI
Other academic responsibilities	• Faculty member, tutor for the Computing for Data Science MSc Program and member of the selection committee. Faculty of Engineering, Free University of Bozen-Bolzano.
	• Faculty member, Organiser of bi-weekly modelling seminars Department of Mathematics, University of Trento, Italy.
	• Topical Board member of MDPI Journal /Biology/.
	• Editor for the special issue Computational Methods in Synthetic Biology, MDPI/Biology/.
	• Organiser of the Internal Seminar CISBIC, Imperial College, UK
	• Speaker of the Graduiertenkolleg 446 PhD Programme University of Leipzig, Germany.
	• Student representative of the Examination Commission. International Masters Programme in Computational Logic Dresden University of Technology, Germany.

Research and scholarships

- My research interests are in computational biology, with published results that span algorithmic aspects, mathematical and computational models that address biological questions, and design and implementation of domain specific languages. I have recently developed and implemented a stochastic simulation algorithm for analyzing chemical reaction network models in systems biology. The manuscript reporting this work is currently under review.

- My more recent research targets genetic data and their use in genome wide association studies. These efforts partially constitute towards our contribution to the *DyHealthNet* project, whereby I develop algorithms that aim at reducing computational costs of GWAS via approximation for quick querying. With my PhD student, we have explored relational databases for their potential in storing and querying genetic data, with results published at the VLDB journal in 2025. For the next phase of this project, we are developing a framework for sharing genetic data while preserving both utility and privacy.

- In my past role at ThinkingNode Life Science Inc., I oversaw the development of a distributed A.I. system. I have personally developed a pipeline for the integration of data from public databases Reactome, KEGG, Uniprot, GO and Ensembl as well as transcriptomics and datasets provided by our clients. For this, I used a variety of technologies based on relational and graph databases. We have concluded pilot projects for Honda and Johnson & Johnson.

Date granted	Award Holder(s)	Funding Body	Title	Amount received
29.7.2020	Ozan Kahramanoğulları	ASSEMBLE Plus (European Marine Biological Resource Centre)	Understanding Coral Colony Morphology via Stochastic Modelling	€ 10.000
1.10.2016	Martin Hancyzc (P.I.- Uni. Trento)	European Union Horizon 2020	Living Architecture	€ 217.218 to Uni. Trento; 3.216.555 € to 6 European institutions.
1.6.2006	Prof. P. Gardner (P.I. - Imperial College) & Prof. L. Cardelli (P.I. - Microsoft Research Cambridge)	Biotechnology and Biological Sciences Research Council, U.K.	Applying Techniques from Process Algebra to Model Cell Behaviour	£ 155.146
1.10.2002	Prof. G. Brewka (P.I. - University of Leipzig)	German Research Foundation (DFG)	PhD Studentship, DFG Graduiertenkolleg 446	ca. € 60.000
1.11.2004	Prof. Steffen Hölldobler (P.I. – T. U. Dresden)	German Research Foundation (DFG)	Visiting researcher grant	ca. € 5.000
1.1.2001	Ozan Kahramanoğulları	German Academic Exchange Service	Exchange student grant	ca. € 2.000

Publications

Papers. ᴧ: corresponding author, †: alphabetical order

M. S. Hafidi, Kahramanoğulları, O., A. Dignös, J. Gamper, Relational Data Models for Genetic VCF data, VLDB Journal, Vol. 11 (8), 2025.

Giordano, B., Bramanti, L., Kahramanoğulları, O., Perrin, J., Vielzeuf, D., Early stages of development in Mediterranean red coral (*Corallium rubrum*): the key role of sclerites, Frontiers Marine Science, 10, 2023

Kahramanoğulları, O.⋆, Giordano, B., Perrin, J., Vielzeuf, D., Bramanti, L., Stochastic diffusion characterizes early colony formation in Mediterranean coral C. rubrum, Journal of Theoretical Biology, 553, 111247, 2022.

Sottile, S, Kahramanoğulları, O.⋆, Sensi, M., How network properties and epidemic parameters influence stochastic SIR dynamics on scale-free random networks, Journal of Simulation, 2022.

Righetti, E; Kahramanoğulları, O.ᴧ, The inverse correlation between robustness and sensitivity to autoregulation in two-component systems, Mathematical Biosciences, 341, 108706, 2021.

Righetti, E; Uluˌseker, C.; Kahramanoğulları, O.ᴧ, Stochastic Simulations as a Tool for Assessing Signal Fidelity in Gene Expression in Synthetic Promoter Design, MDPI, 10(8), 724, 2021.

Uluseker, C.; Torres-Bacete, J; Garcia, J.; Hanczyc, M.; Nogales, J.; Kahramanoğulları, O.ᴧ, Quantifying dynamic mechanisms of auto-regulation in Escherichia coli with synthetic promoter in response to varying external phosphate levels, Scientific Reports, 9, 2019.

Reali, F.; Morine, M.; Kahramanoğulları, O.; Raichur, S; Schneider, H; Crowther, D.; Priami, C., Mechanistic interplay between ceramide and insulin resistance, Scientific Reports, 7, 2017.

Kahramanoğulları, O.ᴧ; Cardelli L., Gener: A minimal programming module for chemical controllers based on DNA strand displacement, Bioinformatics, 31(17), 2015.

Kahramanoğulları, O., Interaction and Depth against Nondeterminism in Proof Search, Logical Methods in Computer Science, 10(2:5), 2014.

Kahramanoğulları, O.ᴧ; Lynch J., Stochastic Flux Analysis of Chemical Reaction Networks, BMC Systems Biology, 7:133, 2013.

Kahramanoğulları, O.ᴧ; Fantaccini G.; Lecca P.; Morpurgo D.; Priami C., Algorithmic modeling quantifies the complementary contribution of metabolic inhibitions to gemcitabine efficacy, PLoS ONE, 7(12), 2012.

Kahramanoğulları, O.ᴧ; Cardelli L., An Intuitive Modelling Interface for Systems Biology, International Journal of Software and Informatics, 7:4, 2012.

Kahramanoğulları, O.ᴧ, Lynch J., Jordan F., CoSBiLab LIME: a language interface for stochastic dynamical modelling in ecology, Environmental Modelling and Software, 26:685-687, 2011.

Cardelli, L.; Caron, E.; Gardner, P.; Kahramanoğulları, O.ᴧ,†; Phillips A., A Process Model of Rho GTP-binding Proteins, Theoretical Computer Science, 410, 2009.

Gurry T.; Kahramanoğulları, O.; Endres R., Biophysical Mechanism for Ras-Nanocluster Formation and Signaling in Plasma Membrane, PLoS ONE, 4, 2009.

Kahramanoğulları, O., On Linear Logic Planning and Concurrency, Information and Computation, 207 (11), 2009.

Kahramanoğulları, O., System BV is NP-complete, Annals of Pure and Applied Logic, 152 (1-3), 2008.

Books and Chapters

Kahramanoğulları, O., 2024, Chemical Reaction Models in Synthetic Promoter Design in Bacteria, Synthetic Promoters: Methods and Protocols, 3-31, Mario Andrea Marchisio (ed.) Methods in Molecular Biology, volume 2844, Springer.

Kahramanoğulları, O.; Vaggi F.; Phillips A., 2012, Process Modeling and Rendering of Biochemical Structures: Actin, Biomechanics of cells and tissues: experiments, models and simulations, Lecture Notes in Computational Vision and Biomechanics, Springer.

Kahramanoğulları, O., 2012, Nondeterminism and Language Design in Deep Inference, A Proof Theoretic Approach to Logic Programming, Lambert Academic Publishing, ISBN 978-3-659-13475-3.

Kahramanoğulları, O., 2012, Process algebra models in biology: the case of phagocytosis, Bioinformatics & Computational Systems Biology: Recent Advances and Applications, IGI Global.

Published Conference and Workshop Papers

Kahramanoğulları, O., 2024, Deep Inference in Proof Search: The Need for Shallow Inference. Proceedings of Logic for Programming, Artificial Intelligence, and Reasoning, 25th International Conference, Proc. of LPAR'24, Mauritius, May 26-31.

Kahramanoğulları, O., Lorenzo Bramanti, Maria Carla Benedetti, 2019, Stochastic Mechanisms of Growth and Branching in Mediterranean Coral Colonies. Proc. of 8th International Conference on the Theory and Practice of Natural Computing, TPNC 2019, Kingston, Canada, December 9-11, 2019, LNCS, Springer.

Kahramanoğulları, O., Cansu Uluseker, Martin M. Hanczyc, 2019, Stochastic Mechanisms of Information Flow in Phosphate Economy of Escherichia Coli. Proc. of the 3rd International Conference on Numerical Computation: Theory and Applications, NUMTA 2019, Le Castella, Italy, June 15-21, 2019, LNCS, Springer.

Kahramanoğulları, O., 2019, On Quantitative Comparison of Chemical Reaction Network Models. Proceedings of 3rd Workshop on Program Equivalence and Relational Reasoning. PERR 2019, Prague, April 6, EPTCS.

Kahramanoğulları, O., 2019, Enumerating Dominant Pathways in Biological Networks by Information Flow Analysis. Proceedings of 4th International Conference on Algorithms for Computational Biology AlCoB 2019, Berkley, USA, June 28-30, LNCS, Springer.

Cansu Uluseker, Martin M. Hanczyc, Kahramanoğulları, O., 2018, Mechanisms of Switching Response to External Phosphate Levels in Escherichia coli. Artificial Life Conference Proceedings, 23-27 July, 2018, Tokyo.

Cansu Uluseker, Jesus Torres-Bacete, Jose L. Garcia, Martin M. Hanczyc, Juan Nogales, Kahramanoğulları, O., 2017, A Dynamic Model of the Phosphate Response System with Synthetic Promoters in E. coli. Proc. of the International Conference on Artificial Life, 4-8 September, 2017, Lyon.

Kahramanoğulları, O., 2017, Quantifying Information Flow in Chemical Reaction Networks. Proceedings of 4th International Conference on Algorithms for Computational Biology AlCoB 2017, Aveiro, Portugal, June 5-6, LNCS, Springer.

Kahramanoğulları, O., 2017, Deep Proof Search in MELL. Proceedings of Logic for Programming, Artificial Intelligence, and Reasoning, 21st International Conference, Proc. of LPAR'17, Maun Botswana, May 7-12.

Kahramanoğulları, O., 2016, Simulating Stochastic Dynamic Interactions with Spatial Information and Flux. Proc. of 5th International Conference on the Theory and Practice of Natural Computing, TPNC 2016, Sendai, Japan December 12-13, 2016, LNCS, Springer.

Kahramanoğulları, O., 2016, True Concurrency of Deep Inference Proofs. Proceedings of 23rd Workshop on Logic, Language, Information and Computation, WoLLIC 2016, August 16-19, 2016, Puebla, Mexico, LNCS 9803, Springer.

Zunino R., Nikolic D., Priami C., Kahramanoğulları, O., Priami C., Schiavinotto T., 2015, I: An Imperative DSL to Stochastically Simulate Biological Systems. Proceedings of Programming Languages with Applications to Biology and Security 2015, LNCS 9465, Springer.

Kahramanoğulları, O., Lynch J., Priami C., 2014, Algorithmic Systems Ecology: Experiments on Multiple Interaction Types and Patches. Proceedings of InSuEdu 2012, LNCS 7991, Springer.

Kahramanoğulları, O., Jordan F., Priami C., 2011, Composability: Perspectives in Ecological Modeling. Proceedings of ANB 2011, LNCS 6479, Springer.

Lecca P. and Kahramanoğulları, O., Morpurgo D., Priami C., Soo R. A., 2011, Modelling and estimating dynamics of tumor shrinkage with BlenX and KInfer. 13th International Conference on Modelling and Simulation, March 30 - April 1, Cambridge, UKSim 2011, IEEE.

Kahramanoğulları, O., 2010, Flux Analysis in Process Models via Causality. 3rd Workshop "From Biology to Concurrency and back". Proceedings of FBTC'10, March 27, 2010, Cyprus, EPTCS 19.

Kahramanoğulları, O., Cardelli L., Caron E., 2009, An Intuitive Automated Modelling Interface for Systems Biology. Fifth Workshop on Developments in Computational Models, Computational Models from Nature., Rhodes, Greece, Proceedings of DCM'09, EPTCS 9.

Cardelli, L., Caron, E., Gardner, P., Kahramanoğulları, O., Phillips A., 2009, A Process Model of Actin Polymerisation, Proceedings of the workshop From Biology to Concurrency and back, FBTC'08, Reykjavik, Volume 229 of ENTCS, Elsevier.

Kahramanoğulları, O., 2008, On Linear Logic Planning and Concurrency, Proceedings of the 2nd International Conference on Language and Automata Theory and Applications, LATA'08, Tarragona, Spain, Volume 5196 of LNCS, Springer.

Kahramanoğulları, O., Cardelli, L., Gardner, P., 2008, A Process Model of Rho GTP-binding Proteins in the Context of Phagocytosis, Proceedings of the workshop From Biology to Concurrency and back, FBTC'07, Lisbon, Portugal, Volume 194 of ENTCS, Elsevier.

Kahramanoğulları, O., 2008, Maude as a Platform for Designing and Implementing Deep Inference Systems, Proceedings of the Eighth International Workshop on Rule-Based Programming, RULE'07, Paris, France, Volume 219 of ENTCS, Elsevier.

Kahramanoğulları, O., 2006, Reducing Nondeterminism in the Calculus of Structures, Proceedings of the 13th International Conference on Logic for Programming Artificial Intelligence and Reasoning, LPAR'06, Phnom Penh, Cambodia, Volume 4246 of LNCS, Springer.

Kahramanoğulları, O., 2006, System BV is NP-complete, Proceedings of the 12th Workshop on Logic, Language, Information and Computation, WoLLIC'05, Florianapolis, Brazil, Volume 143 of ENTCS, Elsevier.

Kahramanoğulları, O., Moreau P-E., Reilles A., 2005, Implementing Deep Inference in TOM, Proceedings of the Workshop on Structures and Deduction 2005, SD'05, satellite workshop of ICALP 2005, July 11 - 15, Lisbon, Portugal.

Kahramanoğulları, O., 2005, Towards Planning as Concurrency, Proceedings of the IASTED International Conference on Artificial Intelligence and Applications, AIA'05, Innsbruck, Austria, Acta Press.

Kahramanoğulları, O., 2004, System BV without the Equalities for Unit, Proceedings of the 19th Int. Symposium on Computer and Information Sciences, Kemer, Turkey, Volume 3280 of LNCS, Springer.

Kahramanoğulları, O., 2004, Implementing system BV of the calculus of structures in Maude, Proceedings of the ESSLLI-2004 Student Session, 117-127, Nancy, France. *Short-listed for best paper.*

Kahramanoğulları, O., Thielscher, M., 2003, A Formal Assessment Result for Fluent Calculus Using the Action Description Language Ak, Proceedings of the 26th Annual German Conference on Artificial Intelligence, KI'03, Hamburg, Volume 2821 of LNAI, Springer.

Other Papers at Workshops and Conferences without Proceedings

Kahramanoğulları, O., Anton Dignös, and Johann Gamper, 2024, Causal Analysis in Biopathways via Stochastically Simulated Perturbations. Proceedings of the 20th International Symposium on Bioinformatics Research and Applications Proc. of ISBRA'24, Kunming, China, July 19-21,

Kahramanoğulları, O., Maria Carla Benedetti, Lorenzo Bramanti. Stochastic mechanisms of growth and branching in mediterranean coral colonies. 11th Conference on Dynamical Systems Applied to Biology and Natural Sciences DSABNS 2020 Trento, Italy, February 4-7, 2020.

Kahramanoğulları, O., Cansu Uluseker, Martin M. Hanczyc. Stochastic mechanisms of auto-regulation in Escherichia coli with synthetic promoter in response to varying external phosphate levels. Italian Regional Conference on Complex Systems CCS/Italy, FBK, Trento, July 1-3, 2019.

Kahramanoğulları, O. Deep inference for proof search. 5th International Workshop on Structures and Deduction. Affiliated with FSCD '19. Dortmund, Germany, June 29-30, 2019.

Kahramanoğulları, O., Martin M. Hanczyc. Quantifying mechanisms of bacterial phosphate economy for synthetic apps. Tenth Conference Dynamical Systems Applied to Biology and Natural Sciences DSABNS 2019 Napoli, Italy, February 3-6, 2019.

Kahramanoğulları, O., Cardelli, L. Gener: A minimal programming module for chemical controllers based on DNA strand displacement. SSBSS'15. International Synthetic and Systems Biology Summer School, Taormina, Sicily, Italy, July 5-9, 2015.

Kahramanoğulları, O., Lynch, J. Stochastic Flux Analysis of Chemical Reaction Networks. 2nd Symposium on Complex Biodynamics & Networks, Tsuruoka, Japan, May 11- 13, 2015.

Kahramanoğulları, O., Lynch J. A Theory of Model Equivalence, Collection of essays in honor of Luca Cardelli, Microsoft Research Technical Report, September 2014.

Kahramanoğulları, O., Jordan F., 2011, Tutorial: COSBILAB LIME: a language interface for stochastic dynamical modelling in ecology. May 30 – June 2, 7th European Conference on Ecological Modelling, Riva del Garda, Italy.

Lecca P., Kahramanoğulları, O., Morpurgo D., Priami C., Soo R., 2011, Modelling the tumor shrinkage pharmacodynamics with BlenX, 1st IEEE International Conference on Computational Advances in Bio and medical Sciences, February 3 – 5, Orlando, Florida, USA.

Kahramanoğulları, O., Jordan F., 2010, Compositional stochastic modelling of dynamical ecosystems. XX Congresso Societa Italiana di Ecologia, "Sapienza" Uni. di Roma, September 27–30, Rome, Italy.

Kahramanoğulları, O., Cardelli, L., Caron, E., 2009, An Intuitive Automated Modelling Interface for Systems Biology, March 23–25, Noise in Life 2009, Møller Centre, Cambridge.

Kahramanoğulları, O., Cardelli, L., Caron, E., 2009, An Intuitive Automated Modelling Interface for Systems Biology, March 30 – April 1, BioSysBio 2009, University of Cambridge.

Ingredients of a Deep Inference Theorem Prover, Proceedings of the 2nd International Workshop on Classical Logic and Computation, CL&C'08, satellite workshop of ICALP 2008, Reykjavik, Iceland.

Kahramanoğulları, O., 2008, Interaction and Depth against Nondeterminism in Deep Inference Proof Search, April 11, London Theory Day, Imperial College.

Kahramanoğulları, O., 2007, On Linear Logic Planning and Concurrency, 14th International Conference on Logic for Programming Artificial Intelligence and Reasoning, LPAR'07, Yerevan, Armenia.

Kahramanoğulları, O., 2007, On Concurrent Computations in Petri Nets for Modelling Signalling Pathways, June 14– 15, Workshop on Rule-Based Modeling of Biochemical Systems, Santa Fe Institute, New Mexico.

Kahramanoğulları, O., 2007, Interaction and Depth against Nondeterminism in Proof Search, April 19 – 20, Automated Reasoning Workshop 2007, Imperial College.

Kahramanoğulları, O., 2006, Deep Inference and Nondeterminism, October 25, London Theoretical Computer Science Seminar, King's College.

Kahramanoğulları, O., 2006, Deepest of the Deep Inference, July 7, Proof Theory Meeting in Bath, University of Bath.

Kahramanoğulları, O., 2005, Nondeterminism in the Deep Inference Presentation of Classical Logic, ICCL Workshop, Deep Inference and Proof Theory 2005, December 14 – 15, TU Dresden, Germany.

Kahramanoğulları, O., 2005, System BV is NP-complete, ICCL Workshop, Proof Theory 2005, February 21 – 23, TU Dresden, Germany.

Kahramanoğulları, O., 2005, Reducing the Non-Determinism in Proof Search in System BV, ICCL Workshop, Proof Theory 2005, February 21 – 23, TU Dresden, Germany.

Kahramanoğulları, O., 2005, Labeled Event Structure Semantics of Linear Logic Planning, March 26 - April 1, 1st World Congress on Universal Logic, Montreux, Switzerland.

Kahramanoğulları, O., 2004, Labelled Event Structure Semantics of Plans, ICCL Workshop, Proof Theory 2004, September 27 – 28, TU Dresden, Germany.

Kahramanoğulları, O., 2004, Using Partial Order Plans for Project Management, Proceedings of the 12. Leipziger Informatik-Tage, Univeristy of Leipzig.

Kahramanoğulları, O., 2004, Plans as Formulae with a Non-commutative Logical Operator, June 17– 19, Proof, Computation, Complexity International Workshop, TU Dresden, Germany.

Kahramanoğulları, O., 2003, From Deduction to Computation in the Calculus of Structures via Term Rewriting, November 19 – 21, Workshop on Structural Proof Theory, TU Dresden, Germany.

Kahramanoğulları, O., Thielscher, M., 2003, A Formal Assessment Result for Fluent Calculus Using the Action Description Language Ak, Proceedings of the 2003 AAAI Spring Symposium, Logical Formalizations of Commonsense Reasoning, Stanford University, California.

Posters at Conferences

Righetti E., Kahramanoğulları, O., 2020, Signal fidelity and robustness in Escherichia coli phosphate response with synthetic promoters. 11th Conference on Dynamical Systems Applied to Biology and Natural Sciences DSABNS 2020 Trento, Italy, February 4-7, 2020.

Kahramanoğulları, O., Hanczyc M. M., 2018, Scheduling multi-armed liquid handling robot tasks by resource sensitive concurrency. Artificial Life Conference Proceedings, 23-27 July, 2018, Tokyo.

Kahramanoğulları, O., Jordan F., 2011, Using the compositionality feature of LIME in building a multi-network model. May 30 – June 2, 7th European Conference on Ecological Modelling, Riva del Garda, Italy.

Lecca P., Kahramanoğulları, O., Fantaccini G., Morpurgo D., Priami C., 2011 Predicting the gemcitabine efficacy by a BlenX model. Population Age Group Europe Meeting, June 7 – 10, Athens, Greece.

Lecca P., Kahramanoğulları, O., Morpurgo D., Priami C., 2011, A BlenX pharmacodynamics model of tumour shrinkage by gemcitabine+carboplatin in lung cancer patients, MedChem Europe Conference, March 28 – 29, Munich, Germany.

Lecca P., Kahramanoğulları, O., Morpurgo D., Priami C., Soo R. A., 2011, A Modelling the tumor shrinkage pharmacodynamics with BlenX, 1st IEEE International Conference on Computational Advances in Bio and medical Sciences, February 3 – 5, Orlando, Florida, USA.

Kahramanoğulları, O., Cardelli, L., Caron, E., 2008, An Intuitive Automated Modelling Interface for Systems Biology, Institute of Systems and Synthetic Biology - Autumn Symposium, Imperial College.

Kahramanoğulları, O., Cardelli, L., Caron, E., Gardner, P., Phillips A., 2008, A Process Model of Actin Polymerisation, Synthetic Biology, Systems Biology and Bioinformatics Conference, BioSysBio 2008, April 20–22, Imperial College.

Kahramanoğulları, O., Cardelli, L., Caron, E., Gardner, P., Phillips A., 2008, A Process Model of Rho GTP-binding Proteins, March 10–14, Computational and Systems Biology Course at The Microsoft Research – University of Trento COSBI, Trento, Italy.

Kahramanoğulları, O., Cardelli, L., Caron, E., Gardner, P., Phillips A., 2007, A Process Model of Rho GTP-binding Proteins, The Eighth International Conference on Systems Biology, October 1–6, Long Beach, California.

Kahramanoğulları, O., 2007, A Deductive Compositional Approach to Petri Nets for Systems Biology, September 19–21, Computational Methods in Systems Biology, Edinburgh, UK.

Entrepreneurship	In 2019, I have initiated a startup project that aimed at using data science, database, and ML technologies to industrial problems in life sciences. The project proposal was evaluated with a top rank at the initial phase of the "Startup Walley" incubation program of the "Hub Innovazione Trentino". However, I suspended this project due to my commitment in similar activities with ThinkingNode Life Inc.
Statement of interest	My research lies at the intersection of computational biology, biotechnology, and computing. I have contributed to these fields through impactful publications in top-tier journals, leadership roles in interdisciplinary projects, and entrepreneurial experience in a U.S.-based start-up. My academic journey began with a PhD in computer science, where I developed expertise in automated reasoning and language design. This foundation has enabled me to bridge computational methods with life sciences, yielding innovative solutions to complex biological questions and developing new methods and tools. I have consistently leveraged the synergy between these fields to produce innovative results and publications.

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I am passionate about fostering synergy between disciplines. By leveraging my formal training in mathematics, computer science and extensive programming experience (Java, OCaml, C++, Python, R, MATLAB, Prolog), I excel at collaborating with experts across computing and life sciences. My research integrates computational biology with algorithm development and machine learning to address complex biological problems. Data-driven approaches are central to my work. I routinely customize state-of-the-art methods as needed to suit specific biological contexts. Additionally, I am knowledgeable in theoretical foundations and best practices in data visualisation and exploration, which I taught at the MSc level.

In an ongoing project (DyHealthNet 2024–2026) with 4 European partners, I tackle algorithmic challenges related to handling genetic data, which is expected to become prevalent in public domains in the coming decades. The highlights of this line of research are:

• *Database Optimisation:* Enhancing performance for large genetic datasets (VLDB Journal, 2025).
• *Privacy-Preserving Data Sharing:* With my PhD student, we are designing deep neural network models (GANs) that enable secure sharing of genetic data while preserving high fidelity for analysis criteria. This approach has significant implications for healthcare applications where privacy is paramount.
• *Real-Time GWAS Analysis:* I am developing a stochastic sampling algorithm that leverages hierarchical clustering to provide fast approximate solutions for genome-wide association studies (GWAS). This method significantly reduces analysis time compared to traditional exact solutions, which often take hours or days.

These research topics exemplify the transformative potential of algorithms and ML in computational biology. They also open avenues for follow-up investigations into scalability, robustness, and broader applications.

Language competence	Turkish (native), English (C2), Italian (C1 certified), German (C1 certified)