# NICOS ANGELOPOULOS

## PERSONAL INFORMATION

*Born* in Greece

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| *email info:* | http://stoics.org.uk/~nicos/sware/contact.html |
| *website* | http://stoics.org.uk/~nicos |
| *address* | The Pirbright Institute, Surrey, GU24 0NF |
| *citizenship* | Greek/British |

## EDUCATION

*PhD in Computer Science*

**1996-2001**   City University, London

· *Department of Computer Science* · School of Informatics
Thesis: *Probabilistic Finite Domains*
The thesis extended finite domains with probabilistic attributes. Crucially, the constraint store is utilised for enhancing logical inference with probabilistic reasoning.
Advisor: Prof. David GILBERT

*MSc in Advanced Computer Science*

**1992-1993**   Imperial College, London

· *AI specialisation* · Department of Computing
Thesis: *A Constraint-Logic Based approach to scheduling*
This degree focussed heavily on declarative programming in AI.
Advisor: Prof. Robert KOWALSKI

*BSc in Computer Science and Statistics*

**1989-1992**   University of Keele, UK

· *Joint degree, 2.I* · Departments of Computer Science and Maths
Final year project: *An Extensible System for Exploring Grammars*
Supervisor: Dr. Paul SINGLETON

## HONORARY APPOINTMENTS

*Imperial College London*

**08/22-**   Honorary research fellow— IMPERIAL COLLEGE
Department of Immunology and Inflammation, Faculty of Medicine
Collaboration with Prof. Anastasios Karadimitris on multiple myeloma.

## WORK EXPERIENCE

*The Pirbright Institute Pirbright, Surrey*

**10/22-**   Group leader in Computational Biology-PIRBRIGHT

Mid career group leader in computational biology. Working on AI approaches to animal immunity while contributing to the computational and data management infrastructure of the Institute.

*School of Medicine Cardiff University*

**07/20-09/22**   Lect. in Comp. Systems Immunity — CARDIFF

Staff member of the Division of Infection and Immunity, School of Medicine at the University of Cardiff. Research in computational analysis of immunological datasets with focus on sepsis.

*Colchester Essex*

**05/19-06/20**   Lecturer in AI and Comp. Biology— ESSEX UNI

Staff of the School of Computer Science and Electronic Engineering of the University of Essex. Research in logic based big-data, AI, machine learning and Bayesian networks with applications to cancer and biomedical fields.

*Cancer Inst/UCL Huntley St London*

**09/18-04/19**   Computational Scientist for Proteomics— UCL
Researcher in data analytics for proteomic data. Bespoke pipelines for the analysis of mass-spectrometry data sets. With emphasis on biological networks

analyses and model based machine learning.

**11/15-08/18**      Snr staff Scientist in applied statistics—SANGER*

*Sanger Institute Hinxton Cambridgeshire*

Permanent position as a a senior staff scientist in applied statistics, with emphasis on machine learning for probabilistic reasoning, cancer diagnostics and decision support systems.

* Until March 2016 I was based in 14M Genomics, a Sanger spin off.

**1/14-10/15**      Researcher in data analysis— IMPERIAL

*Imperial College, London*

SILAC-based elucidation of the role of kinases and phosphatases in cancer

- proteomic data analysis
- big cancer datasets
- analysis of in-vitro, model organism and in-vivo cancer datasets

PI: Georgios GIAMAS · 01273 873163 · G.Giamas@sussex.ac.uk

**7/13-12/13**      Researcher in mathematical toxicology — YORK

*University of York*

Probabilistic graphical models in toxicology

- uncertainty modelling in toxicology
- Bayesian networks
- statistical machine learning

PI: James CUSSENS · 0117 455 8723 · james.cussens@bristol.ac.uk

**10/10–6/13**      Researcher in computational biology— NKI

*Netherlands Cancer Institute*

Statistical data analysis and development of in silico models for in vitro tumour metastasis

- modelling of focal adhesion dynamics
- Bayesian networks
- network gene association to phenotype
- networks biology

PI: Lodewyk WESSELS · +31 20 5127987 · l.wessels@nki.nl

**10/09–3/10**      Senior scientific officer — ICR, LONDON

*Institute of Cancer Research*

Statistical reasoning in computational cancer biology.

- integrative networks reconstruction
- pipelines for cancer datasets
- helped set up the lab
- grant applications

PI: Rune LINDING

**12/08–9/09**      Researcher in bioinformatics— IAH

*Institute for Animal Health*

Statistical machine learning in systems Biology.

- co-expression patterns in microarrays
- multi platform multi expression co-analysis

PI: Mick WATSON · 0131 651 9208 · mick.watson@roslin.ed.ac.uk

**4/06–10/08**      Researcher in computational statistics— EDIN.

*University of Edinburgh*

BBSRC project: *Selective Chemical Intervention in Biological Systems.* Multidisciplinary project between structural biochemistry group and three other sites. In charge of statistical analysis, machine learning and data warehousing.

- analysis of mass-spectrometry data with R/Bioconductor
- classification trees for virtual screening on pyruvate kinase
- HMRF based clustering from microarray data

PI: Prof Malcolm WALKINSHAW · 0131 6507056 · m.walkinshaw@ed.ac.uk

**9/03–10/05**      Researcher in Bayesian statistics — YORK

*University of York*

EPSRC/Maths for IT project: *Stochastic Logic Programs for MCMC*

- extended stochastic logic programs for realistic priors
- co-developed the theory and implemented the MCMCMS system
- realised programs that act as generative priors for graphical models

PI: James Cussens · 01904 328396 · james.cussens@york.ac.uk

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| | *11/01–6/03*      Researcher in machine learning— IMPERIAL C. |
| *Imperial College, London* | BBSRC: *Biochemical Networks using Probabilistic Knowledge discovery* & EU pilot project: APrIL *Applications of Probabilistic Inductive Logic Programming* |

• worked on probabilistic extensions to biochemical networks
• implemented an EM algorithm (FAM) for stochastic logic programs
• probabilistic aspects of logic learning      • applications in bioinformatics
PI: Stephen Muggleton · 020 7594 8307 · s.muggleton@imperial.ac.uk

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| | *11/00–10/01*      Researcher in stochastic reasoning — YORK |
| *University of York* | EPSRC project: *Induction of Stochastic Logic Programs* |

• stochastic logic programs for machine learning
• co-developed preliminary ideas on MCMC for stochastic logic programs.
PI: James Cussens · 01904 328396 · james.cussens@york.ac.uk

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| | *5/99–10/00*      Researcher in deductive databases— ABERDEEN |
| *University of Aberdeen* | BBSRC/EPSRC project: *Development of a Mediator to Integrate Access to Databases in Molecular Biology* |

• integrated access to remote biological databases
• demonstrated the integration of external data-sources to local views.
PI: Graham Kemp · +46 31 772 5411 · kemp@chalmers.se

FUNDING

Please note that I have yet to win any competitive funding. Until May 2019, when I started at Essex University, I was not in independent positions so I could not be PI or Co-PI. Nevertheless, I had contributed to a number of applications and I have been involved in numerous funding exercises.

*Submitted, 2023*   PI on submission to a $570,000$ project proposal (EP/Y018931/1) to UKRI's call: *Artificial intelligence innovation to accelerate health research* - March, 2023. *Knowledge AI tools for bridging animal and human health.* With 6 CoPIs from Pirbright Institute. Two post-doctoral positions for 1.5 years (call specific duration).

*Submitted, 2023*   CoPI on submission to a $625,000$ project proposal to BBSRC responsive mode- March, 2023. *Local and systemic immune profiling in pigs after FMDV infection and immunisation.* PI: Wilhelm Gerner. One post-doc for 33 months and technician for 2 months.

*Submitted*   Only author and PI for EPSRC new investigator project (May 2022): *abstract machine level support for probabilistic logic programming.* 1 post-doc position, for 2 years. Decision expected in Spring 2023.

*Rejected, 2021-22. Invited to 2nd round*   Main author of an $1.3M$ project proposal to Wellcome Trust's call on Technology Development Grants - April 2021. *Kastor: Knowledge Atlas of Sepsis TranslatiOnal Research.* Lead applicant: Prof Peter Ghazal. The submission passed pre-application stage and invited to the 2nd round. Although the application was not funded, it had high evaluation marks.

*Contributions*   At Imperial College, ICR, NKI and York university I contributed text on statistical machine learning aspects of a variety of proposals in the area of computational biology.

*Royal Society*   Short study visit grant to collaborate with Prof Mamitsuka's group in Kyoto University on *Application of MCMC methodologies to biological network discovery.* Three weeks in October 2006.

*EPSRC*   Acknowledged researcher in submitted EPSRC project proposal: *MCMC with Informative Structural Priors*, 07/2005. (Rejected despite 2 very positive reviews.)

*EPSRC*   The 2003-5 project (*SLPs for MCMC*) had overall assessment of "*tending to outstanding*" and "*outstanding*" communication of research.

*Royal Society*   A 3-week study visit grant to collaborate with Prof Sato's group in Tokyo Institute of Technology on *MCMC for Prism programs*, Nov. 2004.

*European Union*   I was one of the two RAs working on the EU pilot project *Applications of Probabilistic Inductive Logic Programming.* This was assessed as successful and the EU funded a 3 year follow-on involving a number of European unis.

*Royal Society*   Short study visit grant to visit Prof Sato's group in Tokyo Inst. of Tech. on *EM algorithms for SLPs and Prism.* Two weeks in Oct. 2003.

*EPSRC*   Text contributor and named researcher in EPSRC funded project *Stochastic Logic Programs for MCMC*, 2003.

*BBSRC*   Contributor and named researcher for the funded BBSRC project *Studying Biochemical Networks using Probabilistic Knowledge discovery*, 2002.

### OPEN SOURCE PROGRAMS

*Website*    Software can be found at http://stoics.org.uk/~nicos/sware/ and at https://github.com/nicos-angelopoulos. Notably, programs that manipulate and reason over Distributional Logic Programs and cross logical-statistical programming with Prolog and R, with emphasis on knowledge AI for big data, bio analyics.

*Bims*    Bayesian Inference of Model Structure - Markov chain sampling method for Bayesian machine learning of Distributional Logic Programming (DLP) defined models.

*Real*    A powerful low-level Prolog interface to the R statistical software. In collaboration with the group of Dr Vitor Costa Santos. A platform for integrative functional statistics in logic programming, with more than 520 downloads.

*ProSQLite*    A popular low-level SWI-Prolog interface library to the SQLite database, with more than 650 downloads.

*Pepl*    An implementation of the failure adjusted maximisation (FAM) algorithm over Stochastic Logic Programs (SLPs).

*bio_db*    High quality biological datasets as Prolog facts served via 5 alternatitve back-ends.

*bio_analytics*    Tools for the analysis of experimental results in tandem with bio_db. Including mapping of gene ontology over-representation analysis onto STRING network.

*Probabilistic meta-interpreters*    For Probabilistic Concurrent Constraint Programming, (PCCP) and Probabilistic Finite Domains, (PFD).

## PROFESSIONAL ACTIVITIES

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| *Invited speaker* | 10th South of England Regional Programming Language Seminar (S-REPLS 10, Birkbeck College, London, 18th September 2018). Probabilistic Logic Programming 2015, Cork, Ireland, August 2015. |
| *Departmental seminars* | 2023, Barts Cancer Institute, Queen Mary University of London. 2023, Earlham Institute, Norwich Research Park. 2022, Vrije Universiteit, Amsterdam, Comp. Science Dept., AI Section. 2016, University of Kent, Computer Science Department. |
| *Senior committee member* | IJCAI Program Committee Board (2022-4), IJCAI/ECAI 2022, IJCAI 2021, ICLP 2021 (Workshops chair) |
| *Committee member* | IJCAI-PRICAI 2020, ICLP 2020, CMSB- Comp Meth in Sys Bio 2020, IEEE 33rd Int. Symp. on Comp. Based Med. Sys (CBMS 2020), WCB 2018, 2015, 2013, 2012, CP 2017 (Bioinformatics Track), IJCAI 2015, PLP 2016, 2015, Ciclops 2013, ProBioMed 2011 (Probabilistic problem solving in biomedicine), MLG 2009, 2008 (Machine Learning with Graphs). |
| *Special issue editor* | Plp@IJAR, Probabilistic Logic Programming issue on International Journal of Approximate Reasoning |
| *Workshop initiator* | PLP Series, 2014-20, workshop on Probabilistic Logic Programming |
| *Workshop organiser* | PLP 2014, workshop on Probabilistic Logic Programming WCB 2014, (Workshop on Constraint Logic systems in Biology), Ciclops 2012, (Colloquium on Impl. of Constraint and LOgic Prog. Systems). |
| *Review Editor* | Computational Intelligence section of Frontiers in Robotics & AI, (2014-2020). Frontiers in Bioinformatics - Integrative Bioinformatics (2022-). |
| *Reviewer* | Communications Biology 2020 (1); Expert Systems With Applications 2020-2 ( 5); Machine Learning 2019 (ILP special issue); BMC Genomics 2019; AI Reviews, 2017; Theory and Practice of Logic Programming, 2018; Project reviewer for FWO (Belgian research council), 2016 J. of Molecular Modelling, 2010-2020, > 30 reviews; Bioinformatics, 2012, 2017-8; WIREs Comp. Stat. rev., 2012 Machine Learning J., 2009; ECML, 2004 |
| *PhD examiner* | Sam Neaves, Innovations in applying Logic Programming to Bioinformatics, King's College, London, 2018 George Elder, Evaluating Symbolic AI as a Tool to Understand Cell Signalling, Queen Mary College, London, 2023 |

## RESEARCH OUTPUT

*REF-2021*

Cardiff University submitted 5 of my publications in REF 2021. This is the maximum number of publications allowed for a single member of staff (the average was 3, minimum was 1 per submitted staff).

## TEACHING

*Taught*

- Databases and Information Retrieval
  (2nd Year CS Undergraduates, University of Essex, 2019-20)
- Introduction to R- delivered via zoom
  (MSc in Bioinformatics, Cardiff University, Medical School, 2020-21)
- R programming (MSc Applied and Experimental Clinical Immunology
  Cardiff University, Medical School, 2021-22)
  Developed new material for 15-hour long module.

*External Examiner*

- External course approval and external examiner for on-line course of the Univ. of London MSc in Comp. Science delivered by Birkbeck College (2021-).

*Master's Theses*

- Supervised 3 MSc theses on given topics (2018-9, Essex)
- 2 MSc students chose my projects (2019-20, Essex)
- 5 MSc students chose my projects, supervised by Dr Sophia Tsoka
  (2018-20, King's College London)

*Assisted*

I have been involved in tutorial support, laboratory supervision and marking for modules in the areas of :
- big data analysis- with R (Birkbeck, 2018)
- declarative programming • logic • logic programming
- imperative programming
- bioinformatics (Imperial College)
- supervised learning with R for biologists (NKI)

## ADMIN

*Roles*

At Pirbright I head substantial infrastucture efforts. Including: the development of strategic plan for data management, being scientific lead of the high performance cluster, recruitment of a senior bioinformatician for the core group leading a scientific computing committee that focuses on guiding IT services in modernising their facilities for enabling data analytics and scientific computing.
At University of Essex I played a positive role in the administration of the School and was punctual with all tasks assigned to me. In the summer of 2019 I was programme chair for the CEEC conference run annually by the School. Within 9 months from joining the School, I was given a senior role: admissions tutor for postgraduate by research studies.

## COMPUTER SKILLS

*Programming*  Prolog, R, SQL, C, Pascal, Miranda

*Prolog Systems*  SWI-Prolog, Yap, Sicstus

*Operating Systems*  Linux, Unix / X11, scripting

## OTHER INFORMATION

*Languages*  Greek  ·  mother tongue

English  ·  fluent

Japanese  ·  post-beginner

This is the public version of my C.V., containing no private information about my academic referees. Please contact me for a list of referee names.

Pdfs for most of my publications can be retrieved from: `http://stoics.org.uk/~nicos/pbs`.
Google Scholar: `https://scholar.google.com/citations?user=-ZT5NUkAAAAJ&hl=en`
Google Scholar metrics on 18/03/2023: i10-index 26 (13 since 2017), h-index 18 (12 since 2017), 2294 citations (1852 since 2018).
Researchgate: `https://www.researchgate.net/profile/Nicos_Angelopoulos`.

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# Journals, Chapters and International Conferences

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[A1] Tim Downing and Nicos Angelopoulos. A primer on correlation-based dimension reduction methods for multi-omics analysis. *Royal Society Interface*, Oct 2023. On-line.

[A2] Youri Hoogstrate et al. Transcriptome analysis reveals tumor microenvironment changes in glioblastoma. *Cancer Cell*, 41(4):678–692, 2023. On-line.

[A3] Nicos Angelopoulos, Aikaterini Chatzipli, Jyoti Nangalia, Francesco Maura, and Peter J. Campbell. Bayesian networks elucidate complex genomic landscapes in cancer. *Communications Biology*, 5(1):Article 306, 2022. On-line.

[A4] Sharma Sharma et al. mSep: investigating physiological and immune-metabolic biomarkers in septic and healthy pregnant women to predict feto-maternal immune health – a prospective observational cohort study protocol. *BMJ Open*, 12(9), 2022. On-line.

[A5] Even H. Rustad, Ferran Nadeu, Nicos Angelopoulos, Bachisio Ziccheddu, Niccolo Bolli, Xose S. Puente, Elias Campo, Ola Landgren, and Francesco Maura. mmsig: a fitting approach to accurately identify somatic mutational signatures in hematological malignancies. *Communications Biology*, 4:Article no: 424, March 2021. On-line.

[A6] Even H. Rustad, Venkata D. Yellapantula, Dominik Glodzik, Kylee H. Maclachlan, Benjamin Diamond, Eileen M. Boyle, Cody Ashby, Patrick Blaney, Gunes Gundem, Malin Hultcrantz, Daniel Leongamornlert, Nicos Angelopoulos, Luca Agnelli, Daniel Auclair, Yanming Zhang, Ahmet Dogan, Niccolo Bolli, Elli Papaemmanuil, Kenneth C. Anderson, Philippe Moreau, Herve Avet-Loiseau, Nikhil C. Munshi, Jonathan J. Keats, Peter J. Campbell, Gareth J. Morgan, Ola Landgren, and Francesco Maura. Revealing the impact of structural variants in multiple myeloma. *Blood Cancer Discovery*, 1:258, 2020. On-line.

[A7] Even H. Rustad, Venkata Yellapantula, Daniel Leongamornlert, Niccolo Bolli, Ledergor Guy, Ferran Nadeu, Nicos Angelopoulos, Kevin J. Dawson, Thomas J. Mitchell, Rob Osborne, Bachisio Ziccheddu, Cristiana Cariniti, Vittorio Montefusco, Paolo Corradini, Kenneth C. Anderson, Philippe Moreau, Elli Papaemmanuil, Ludmil Alexandrov, Xose S. Puente, Elias Campo, Reiner Siebert, Herve Avet-Loiseau, Ola Landgren, Nikhil Munshi, Peter J. Campbell, and Francesco Maura. Timing the initiation of multiple myeloma. *Nature Communications*, Article 1917. 21 April 2020. On-line.

[A8] S. Jones, P. J. King, C. N. Antonescu, M. G. Sugiyama, A. Bhamra, S. Surinova, N. Angelopoulos, M. Kragh, M. W. Pedersen, J. A. Hartley, and C. E. Futter. Targeting of EGFR by a combination of antibodies mediates unconventional EGFR trafficking and degradation. *Scientific Reports*, 10:663, 1 2020. On-line.

[A9] Kaspar Draaisma, Aikaterini Chatzipli, Martin Taphoorn, Melissa Kerkhof, Astrid Weyerbrock, Marc Sanson, Ann Hoeben, Slavka Lukacova, Giuseppe Lombardi, Sieger Leenstra, Monique Hanse, Ruth Fleischeuer, Colin Watts, Joseph McAbee, Nicos Angelopoulos, Thierry Gorlia, Vassilis Golfinopoulos, Johan M. Kros, Roel G.W. Verhaak, Vincent Bours, Martin J. van den Bent, Ultan McDermott, Pierre A. Robe, and Pim J. French. Molecular evolution of IDH wild-type glioblastomas treated with standard of care affects survival and design of precision medicine trials: A report from the EORTC 1542 study. *Journal of Clinical Oncology*, 38(1):81–99, 2020. Web link.

[A10] Francesco Maura, Niccolò Bolli, Nicos Angelopoulos, Kevin J. Dawson, Daniel Leong-amornlert, Inigo Martincorena, Federico Abascal, Thomas J. Mitchell, Anthony Fullam, Santiago Gonzalez, Raphael Szalat, Bernardo Rodriguez-Martin, Mehmet Kemal Samur, Dominik Glodzik, Marco Roncador, Mariateresa Fulciniti, Yu Tzu Tai, Stephane Minvielle, Florence Magrangeas, Philippe Moreau, Paolo Corradini, Kenneth Anderson, Jose M. C. Tubio, David C. Wedge, Moritz Gerstung, Herve Avet-Loiseau, Nikhil Munshi, and Peter J. Campbell. The genomic landscape and chronological reconstruction of driver events in multiple myeloma. *Nature Communications*, 10:1–12, 2019. Article no: 3835. Web link.

[A11] Nicos Angelopoulos and Jan Wielemaker. Advances in Big Data Bio Analytics. In *International Conference on Logic Programming*, September 2019. ICLP (Technical Communication).

[A12] Jacob Grinfeld, Jyoti Nangalia, Joanna Baxter, David C Wedge, Nicos Angelopoulos, Rob Cantrill, Anna L Godfrey, Elli Papaemmanuil, Gunes Gundem, Cathy MacLean, Julia Cook, Laura Mudie, Sarah O'Meara, Jon W Teague, Adam P Butler, Charlie E Massie, Nicholas Williams, Francesca L Nice, Christen L Andersen, Hans C Hasselbalch, Paola Guglielmelli, Mary Frances McMullin, Alessandro M Vannucchi, Claire N Harrison, Moritz Gerstung, Anthony R Green, and Peter J Campbell. Classification and personalized prognosis in myeloproliferative neoplasms. *The New England Journal of Medicine*, 379:1416–1430, October 2018. Web link
IF: 79.25.

[A13] Thomas J. Mitchell, Samra Turajlic, Andrew Rowan, David Nicol, James HR Farmery, Tim O'Brien, Inigo Martincorena, Patrick Tarpey, **Nicos Angelopoulos**, Lucy R Yates, Adam P. Butler, Keiran Raine, Grant D. Stewart, Ben Challacombe, Archana Fernando, Jose I Lopez, Steve Hazell, Ashish Chandra, Simon Chowdhury, Sarah Rudman, Aspasia Soultati, Gordon Stamp, Nicos Fotiadis, Lisa Pickering, Lewis Au, Lavinia Spain, Joanna Lynch, Mark Stares, Jon Teague, Francesco Maura, David C. Wedge, Stuart Horswell, Tim Chambers, Kevin Litchfield, Hang Xu, Aengus Stewart, Reza Elaidi, Stéphane Oudard, Nicholas McGranahan, Istvan Csabai, Martin Gore, P. Andrew Futreal, James Larkin, Andy G. Lynch, Zoltan Szallasi, Charles Swanton, and Peter J Campbell. Timing the landmark events in the evolution of clear cell renal cell cancer. *Cell*, 173(3):611–623, April 2018. Web link
IF: 30.41.

[A14] Francesco Maura, Mia Petljak, Marta Lionetti, Ingrid Cifola, Winnie Liang, Eva Pinatel, Ludmil Alexandrov, Anthony Fullam, Inigo Martincorena, Kevin Dawson, **Nicos Angelopoulos**, Mehmet Samur, Raphael Szalat, Jorge Zamora, Patrick Tarpey, Helen Davies, Paolo Corradini, Kenneth Anderson, Stephane Minvielle, Antonino

Neri, Herve Avet-Loiseau, Jonathan Keats, Peter Campbell, Nikhil Munshi, and Niccolo Bolli. Biological and prognostic impact of APOBEC-induced mutations in the spectrum of plasma cell dyscrasias and multiple myeloma cell lines. *Leukemia*, 2017. IF: 12.104.

[A15] Nicos Angelopoulos and Jan Wielemaker. Accessing biological data as Prolog facts. In *19th International Symposium on Principles and Practice of Declarative Programming (PPDP 2017)*, pages 29–38, October 2017. ACM digital library.

[A16] Nicos Angelopoulos and James Cussens. Distributional logic programming for Bayesian knowledge representation. *International Journal of Approximate Reasoning*, 80:52–66, January 2017.

[A17] Nicos Angelopoulos, Samer Abdallah, and Georgios Giamas. Advances in integrative statistics for logic programming. *International Journal of Approximate Reasoning*, 78:103–115, November 2016.

[A18] Nicos Angelopoulos, Justin Stebbing, Yichen Xu, Georgios Giamas, and Hua Zhang. Proteome-wide dataset supporting functional study of tyrosine kinases in breast cancer. *Data in Brief*, 7:740 − 746, 2016.

[A19] Joao Nunes, Hua Zhang, Nicos Angelopoulos, Jyoti Chetri, Clodia Osipo, Justin Stebbing, and Georgios Giamas. ATG9A loss confers resistance to trastuzumab via c-Cbl mediated Her2 degradation. *Oncotarget*, 7:27599–27612, January 2016.
SJR 2015: 2.294, SJR "Oncology" quartile: Q1.
IF: 6.63.

[A20] Nicos Angelopoulos. Probabilistic logic programming (PLP'14). *International Journal of Approximate Reasoning*, 67:59, December 2015. Editorial to Special Section.
SJR 2015: 2.304, SJR "Artificial Intelligence" quartile: Q1.

[A21] Hua Zhang, Nicos Angelopoulos, Yichen Xu, Arnhild Grothey, Joao Nunes, Justin Stebbing, and Georgios Giamas. Proteomic profile of KSR1-regulated signalling in response to genotoxic agents in breast cancer. *Breast Cancer Research and Treatment*, 151(3):555–568, June 2015.
Joint first author.
SJR 2015: 2.424, SJR "Oncology" quartile: Q1.
IF: 4.20.

[A22] Justin Stebbing, Hua Zhang, Yichen Xu, Grothey Arnhild, Ajuh Paul, Nicos Angelopoulos, and Georgios Giamas. Characterization of the tyrosine kinase-regulated proteome in breast cancer by combined use of RNA interference (RNAi) and stable isotope labeling with amino acids in cell culture (SILAC) quantitative proteomics. *Molecular & Cellular Proteomics*, 2015.
Joint last author.
SJR 2015: 3.213, SJR "Molecular Biology" quartile: Q1.
IF: 6.80.

[A23] Nicos Angelopoulos and Georgios Giamas. A logical approach to working with biological databases. In *Proceedings of the Technical Communications of the 31st International Conference on Logic Programming (ICLP 2015)*, volume 1433, Cork, Ireland, September 2015. CEUR Workshop Proceedings.

Technical communication
CORE2014 Rank: A "Computation Theory and Mathematics".

[A24] Yichen Xu, Hua Zhang, Van T Thuy Mai Nguyen, Nicos Angelopoulos, Joao Nunes, Alistair Reid, Laki Buluwela, Luca Magnani, Justin Stebbing, and Georgios Giamas. LMTK3 represses tumor suppressor-like genes through chromatin remodeling in breast cancer. *Cell Reports*, 12(5):837–849, 4 August 2015.
SJR 2015: 8.588, SJR "Biochemistry, Genetics and Molecular Biology" quartile: Q1.
IF: 7.20.

[A25] David MacIntyre, Manju Chandiramani, Yun S Lee, Lindsay Kindinger, Ann Smith, Nicos Angelopoulos, Benjamin C. Lehne, Shankari Arulkumaran, Richard Brown, Tiong Ghee Teoh, Elaine Holmes, Jeremy K. Nicholson, Julian Marchesi, and Phillip R. Bennett. The vaginal microbiome during pregnancy and the postpartum period in a European population. *Scientific Reports*, 5:Article number: 8988, 2015.
SJR 2015: 2.073, SJR "Multidisciplinary" quartile: Q1.
IF: 5.08.

[A26] Emma Spanjaard, Ihor Smal, Nicos Angelopoulos, Ingrid Verlaan, Alexandre Matov, Erik Meijering, Lodewyk Wessels, Hans Bos, and Johan de Rooij. Quantitative imaging of focal adhesion dynamics and their regulation by HGF and Rap1 signaling. *Experimental Cell Research*, 330(2):382–397, 2015.
SJR 2015: 1.900, SJR "Cell Biology" quartile: Q2.
IF: 3.37.

[A27] Nicos Angelopoulos, Vítor Santos Costa, João Azevedo, Jan Wielemaker, Rui Camacho, and Lodewyk Wessels. Integrative functional statistics in logic programming. In *Proc. of Practical Aspects of Declarative Languages*, volume 7752 of *Lecture notes in Computer Science*, pages 190–205, Rome, Italy, Jan. 2013.
CORE2014 Rank: B "Computer Software".

[A28] Sander Canisius, Nicos Angelopoulos, and Lodewyk Wessels. ProSQLite: Prolog file based databases via an SQLite interface. In *Proc. of Practical Aspects of Declarative Languages*, volume 7752 of *Lecture notes in Computer Science*, pages 222–227, Rome, Italy, Jan. 2013.
Joint first author.
CORE2014 Rank: B "Computer Software".

[A29] Nicos Angelopoulos, Andreas Hadjiprocopis, and Malcolm D. Walkinshaw. Learning binding affinity from augmented high throuput screening data. In Huma Lodhi and Yoshihiro Yamanishi, editors, *Chemoinformatics and Advanced Machine Learning Perspectives*, chapter 11, pages 312–324. IGI-Global, 2010.

[A30] Holger Husi, Fiona McAllister, Nicos Angelopoulos, Victoria J. Butler, Kevin R. Bailey, Kirk Malone, Logan MacKay, Paul Taylor, Antony P. Page, Nicholas J. Turner, Perdita E. Barran, and Malcolm Walkinshaw. Selective chemical intervention in the proteome of caenorhabditis elegans. *Journal of Proteome Research*, 9(11):6060–70, 11 2010.
SJR 2015: 1.962, SJR "Biochemistry" quartile: Q1.
IF: 5.0.

[A31] Nicos Angelopoulos, Andreas Hadjiprocopis, and Malcolm D. Walkinshaw. Bayesian ligand discovery from high dimensional descriptor data. *ACS Journal of Chemical Information and Modeling*, 49(6):1547–1557, 6 2009.
SJR 2015: 1.610, SJR "Computer Science Applications" quartile: Q1.
IF: 4.0.

[A32] Nicos Angelopoulos and James Cussens. Bayesian learning of Bayesian networks with informative priors. *Journal of Annals of Mathematics and Artificial Intelligence*, 54(1-3):53–98, November 2008.
SJR 2015: 0.593, SJR "Artificial Intelligence" quartile: Q2.

[A33] Nicos Angelopoulos and James Cussens. Exploiting informative priors for Bayesian Classification and Regression Trees. In *Nineteenth International Joint Conference on Artificial Intelligence (IJCAI-05)*, pages 641–646, Edinburgh, UK, Aug. 2005. IJCAI.
CORE2014 Rank: A* "Artificial Intelligence and Image Processing".

[A34] Nicos Angelopoulos and James Cussens. Tempering for Bayesian C&RT. In *22nd International Conference on Machine Learning (ICML 2005)*, pages 17–24, Bonn, Germany, Aug. 2005. ACM.
CORE2014 Rank: A* "Artificial Intelligence and Image Processing".

[A35] Nicos Angelopoulos. Probabilistic space partitioning in constraint logic programming. In *Ninth Asian Computing Science Conference*, pages 48–62, Chiang Mai, Thailand, December 2004.
CORE2014 Rank: B "Information and Computing Sciences".

[A36] Nicos Angelopoulos. Extending the CLP engine for reasoning under uncertainty. In *14th International Symposium on Methodologies for Intelligent Systems*, pages 365–373, Maebashi, Japan, October 2003.

[A37] Nicos Angelopoulos and Stephen Muggleton. Machine learning metabolic pathway descriptions using a probabilistic relational representation. *Electronic Transactions in Artificial Intelligence*, 7(9):1–11, 2002.

[A38] Nicos Angelopoulos and James Cussens. Prolog issues and experimental results of an MCMC algorithm. In U. Geske, O. Bartenstein, M. Hannebauer, and O. Yoshie, editors, *Web-Knowledge Management and Decision Support - Selected Papers from the 14th International Conference on Applications of Prolog*, volume 2543 of *LNAI*, pages 191–202. Springer, 2002.

[A39] Graham J.L. Kemp, Nicos Angelopoulos, and Peter M.D. Gray. Architecture of a mediator for a bioinformatics database federation. *IEEE Transactions on Information Technology in Biomedicine*, 6(2):116–122, June 2002.
SJR 2015: 0.943, SJR "Health Information Management" quartile: Q1.
IF: 2.07.

[A40] Nicos Angelopoulos and James Cussens. Markov chain Monte Carlo using tree-based priors on model structure. In Jack Breese and Daphne Koller, editors, *Uncertainty in Artificial Intelligence: Proceedings of the Seventeenth Conference (UAI-2001)*, pages 16–23, Seattle, USA, August 2001. Morgan Kaufmann.
CORE2014 Rank: A* "Artificial Intelligence and Image Processing".

[A41] Graham J. L. Kemp, Chris Robertson, Peter M. D. Gray, and Nicos Angelopoulos. CORBA and XML: Design choices for database federations. In Brian Lings and Keith Jeffery, editors, *Advances in Databases*, volume 1832 of *Lecture Notes in Computer Science*, pages 191–208. Springer Berlin/Heidelberg, 2000.

# Minor Conferences and Refereed Workshops

[B42] Nicos Angelopoulos. Notes on the implementation of FAM. In *3rd Probabilistic Logic Programming Workshop*, London, UK, 2016. Collocated with ILP 2016.

[B43] Rosy Favicchio, Nicos Angelopoulos, Diana Brickute, Robin Fortt, Frazer Twyman, Georgios Giamas, Juan Carlos Lacal, and Eric O. Aboagye. Choline metabolism is an early predictor of egfr-mediated survival in nsclc [abstract]. In *107th Annual Meeting of the American Association for Cancer Research*, 2016. Abstract nr 4235.

[B44] Nicos Angelopoulos, Samer Abdallah, and Georgios Giamas. Advances in integrating statistical inference. In *Workshop on Probabilistic logic programming*, Cork, Ireland, 2015.

[B45] Joao Farinha Garcao Nunes, Hua Zhang, Justin Stebbing, Nicos Angelopoulos, and Georgios Giamas. SILAC-based analysis reveals a unique phosphoproteomic-signature of HER2-resistant breast cancer cells. *Anticancer Research*, 34(10):5900, Oct. 2014.

[B46] Nicos Angelopoulos and Georgios Giamas. Prolog bioinformatic pipelines: a case study in gene dysregulation. In *10th Workshop on Constraint-Based Methods for Bioinformatics*, Lyon, France, September 2014.

[B47] Sander Canisius, Nicos Angelopoulos, and Lodewyk Wessels. Exploring file based databases via an SQLite interface. In *ICLP Workshop on Logic-based methods in Programming Environments (WLPE'12)*, pages 2–9, Budapest, Hungary, September 2012.

[B48] Jan Wielemaker and Nicos Angelopoulos. Syntactic integration of external languages in Prolog. In *ICLP Workshop on Logic-based methods in Programming Environments (WLPE'12)*, pages 40–50, Budapest, Hungary, September 2012.

[B49] Nicos Angelopoulos, Paul Shannon, and Lodewyk Wessels. Search and rescue: logic and visualisation of biochemical networks. In *Proceedings of the ICLP 2012 workshop on Constraints in Bioinformatics (WCB'12)*, pages 1–6, Budapest, Hungary, September 2012.

[B50] Nicos Angelopoulos and Lodewyk Wessels. Effective priors over model structures applied to DNA binding assay data. In *Proceedings of the AIME'11 workshop on Probabilistic Bio-Medicine (ProBioMed'11)*, Bled, Slovenia, July 2011.

[B51] Nicos Angelopoulos and Paul Taylor. An extensible web interface for databases and its application to storing biochemical data. In *WLPE '10 workshop, part of ICLP 2010*, Edinburgh, Scotland, July 2010.

[B52] Nicos Angelopoulos. Distributional logic programming: a brief overview. In *NIPS'08 Workshop: Probabilistic Programming: Universal Languages, Systems and Applications*, pages 641–646, Whistler, CA, December 2008.

[B53] Nicos Angelopoulos and James Cussens. Exploiting independence for branch operations in Bayesian learning of C&RTs. In Luc De Raedt, Thomas Dietterich, Lise Getoor, and Stephen H. Muggleton, editors, *Probabilistic, Logical and Relational Learning - Towards a Synthesis*, number 05051 in Dagstuhl Seminar Proceedings, Dagstuhl, Germany, 2006. Internationales Begegnungs- und Forschungszentrum (IBFI), Schloss Dagstuhl, Germany.

[B54] Nicos Angelopoulos and James Cussens. Extended stochastic logic programs for informative priors over C&RTs. In Rui Camacho, Ross King, and Ashwin Srinivasan, editors, *Proceedings of the work-in-progress track of the Fourteenth International Conference on Inductive Logic Programming (ILP04)*, pages 7–11, Porto, Portugal, September 2004.

[B55] Nicos Angelopoulos and James Cussens. On the implementation of MCMC proposals over stochastic logic programs. In *Colloquium on Implementation of Constraint and LOgic Programming Systems. Satellite workshop to ICLP'04*, Saint-Malo, France, 2004.

[B56] Nicos Angelopoulos. Upsh: A Unix to Prolog Shell. In *Workshop on Logic Programming Environments. Satellite workshop to ICLP'04*, Saint-Malo, France, 2004.

[B57] Nicos Angelopoulos. clp(pfd(Y)): Constraints for probabilistic reasoning in logic programming. In *Ninth International Conference on Principles and Practice of Constraint Programming*, pages 784–788, Kinsale, Ireland, October 2003.

[B58] Nicos Angelopoulos and Stephen Muggleton. Machine learning metabolic pathway descriptions using a probabilistic relational representation. In *Machine Intelligence 19*, Wye, UK, September 18-20 2002.

[B59] Nicos Angelopoulos. Exporting Prolog source code. In *Workshop on Logic Programming Environments. Satellite workshop to ICLP'02*, pages 89–96, Copenhagen, Denmark, 2002.

[B60] Nicos Angelopoulos. Probabilistic finite domains: A brief overview. In *International Conference on Logic Programming*, page 475, Copenhagen, Denmark, 2002.

[B61] Nicos Angelopoulos and James Cussens. Prolog issues of an MCMC algorithm. In *Proceedings of the 14th International Conference of Applications of Prolog INAP2001*, pages 246–253, Tokyo, Japan, October 2001.

[B62] Nicos Angelopoulos and David R. Gilbert. A statistical view of probabilistic finite domains. In *Workshop on Quantitative Aspects of Programming Laguages (QAPL'01), Satellite to Principles, Logics, and Implementations of high-level programming languages, (PLI'01)*, Firenze, Italy, 2001.

[B63] Graham J. L. Kemp, Nicos Angelopoulos, and Peter M. D. Gray. A schema-based approach to building a bioinformatics database federation. In *IEEE International Symposium on Bio-Informatics and Biomedical Engineering*, pages 13–20, Washington, USA, 6 2000. IEEE Computer Society Press.

[B64] N. Angelopoulos, A. Di Pierro, and H. Wiklicky. Implementing randomised algorithms in constraint logic programming. In *Joint International Conference and Symposium on Logic Programming, JICSLP'98*, pages 355–356, Manchester, UK, 1998. MIT Press.

# Thesis, Technical Reports and Posters

[C65] Francesco Maura, Even Rustad, Venkata Yellapantula, Niccolo Bolli, Daniel Leong-amornlert, Ferran Nadeu, Nicos Angelopoulos, Kevin Dawson, Thomas Mitchell, Rob Osborne, Bachisio Ziccheddu Ziccheddu, Cristiana Carniti, Vittorio Montefusco, Paolo Corradini, Kenneth C. Anderson, Philippe Moreau, Elli Papaemmanuil, Ludmil Alexandrov, Xose Puente, Elias Campo, Reiner Siebert, Herve Avet-Loiseau, Nikhil Munshi, Peter Campbell, and C. Ola Landgren. Timing the initiation of multiple myeloma. In *In 17 International Myeloma Workshop*, volume 19, pages e6–e7, Boston, MA, USA, 12-15 September 2019.

[C66] Nicos Angelopoulos, Sylvia Le Dévédec, Emma Spanjaard, Karin Legerstee, Kuan Yan, Vasiliki-Maria Rogkoti, Fons Varbeek, Adriaan Houtsmuller, Bob van de Water, Johan de Rooij, and Lodewyk Wessels. In silico models of metastatic cell behaviour. Poster presentation in Netherlands Consortium for System Biology, November 2012.

[C67] Nicos Angelopoulos and James Cussens. Markov chain Monte Carlo over model structures. In *ALP Newsletter, focus on Probabilistic Prolog Systems*, June 2011.

[C68] James Cussens Jianzhong Chen, Stephen Muggleton and Nicos Angelopoulos. Pepl: An implementation of FAM for SLPs. In *ALP Newsletter, focus on Probabilistic Prolog Systems*, June 2011.

[C69] Nicos Angelopoulos and Stephen Muggleton. SLPs for probabilistic pathways: Modelling and parameter estimation. Technical Report 2002/12, Department of Computing, Imperial College, London, UK, 2002.

[C70] Nicos Angelopoulos. *Probabilistic Finite Domains*. PhD thesis, Department of Computing Science, City University, London, UK, 2001.

[C71] Nicos Angelopoulos, Alessandra Di Pierro, and Herbert Wiklicky. Randomised algorithms and constraint logic programming. Technical Report TR-1998-02, City University, London, UK, March 1998.

[C72] Nicos Angelopoulos. Constraint-logic based approach to scheduling. Master's thesis, Department of Computing, Imperial College, London, UK, 1993.