CV – Arnoldo Frigessi

Personal information

First name, Surname:	ARNOLDO FRIGESSI		
Date of birth:	13 April 1959	Sex:	M
Nationality:	Italian		
Researcher unique identifier(s)	https://orcid.org/0000-0001-7103-7589 https://scholar.google.com/citations?user=1h8UJ0cAAAAJ&hl=en		
URL for personal website:	http://www.med.uio.no/imb/english/people/aca/frigessi/index.html		

Education

1984	Laurea in Matematica, University of Milano, Italy

Positions - current and previous

2003-	Professor in Statistics, University of Oslo, Norway
2014-2023	Director of the Oslo Centre for Biostatistics and Epidemiology, Institute of Basic Medical Sciences, University of Oslo and Oslo University Hospital, Norway
2023-2033	Director of the NFR Norwegian centre of excellence INTEGREAT
2015-2024	Director of the NFR Norwegian centre for research-based innovation *BigInsight*
2007-2014	Director, NFR Norwegian centre for research-based innovation *Statistics for Innovation*
1997-2003	Chief Research Scientists. Norwegian Computing Centre (NR), Oslo
1994-1997	Associate Professor in Statistics, Third University of Rome, Italy
1992-1994	Associate Professor in Probability and Statistics, University of Venezia, Italy
1986-1992	Researcher, Istituto per le Applicazioni del Calcolo (IAC), Roma, Italy

Project management experience

2023-2033	Director of INTEGREAT, the Norwegian centre of excellence in Knowledge-driven Machine Learning. Budget: 4 mil € per year.
2015-2023	Director of *BigInsight*, Norwegian Centre for Research-based Innovation, funded by NFR. Consortium of 13 partners: University of Oslo, Oslo University Hospital, NR, University of Bergen, ABB, DNB, DNV-GL, Statistics Norway, Gjensidige, Norsk Hydro, NAV, Skatteetaten and Telenor. Budget: 4 mil € per year. Affiliated scientists: ca. 100, with a core of 40.
2021-2024	Data streams and mathematical modelling pipelines to support preparedness and decision making for COVID-19 and future pandemics (NordicMathCovid), NordForsk, PI, 12 mil kr.
2020-2023	RESCUER, Resistance Under Combinatorial Treatment in ER+ and ER- Breast Cancer, EU H2020 project, co-coordinator with Vessela Kristensen, 6 mil €, 15 partners.
2020-2024	Big Data models and intelligent tools for quality of life monitoring and participatory empowerment of head and neck cancer survivors, EU H2020, WP leader, 9 mil NOK.
2019-2023	Digital Life Norway, Pipeline for individually tailoring new treatments in haematological cancers, funded by NFR, co-PI with Kjetil Tasken, 25 mil NOK.
2020-2024	Digital Life Norway, A road map for academic research-intensive innovation from the Centre of Digital Life, funded by NFR, PI, 30 mil NOK.
2020-2023	Norwegian-American Alliance for Research and Education in Data Driven Mathematical Models of Cancer, UiO & U Minneapolis, PI, 4 mil kr

2007-2014	Director of *(sfi)^2 Statistics for Innovation*, one of the first Norwegian centres for research-based Innovation, funded by NFR. Consortium of 11 partners from academia, industry and the public sector. Budget: 30 mil €.
previously	I have led research projects since 1993, highlights: Highly Structured Stochastic Systems, ESF; Marie Curie Industry-Academia Partnerships, climate change insurance risk; Norwegian Agency for Development Cooperation capacity building project in Hawassa, Ethiopia

Supervision of students

I have supervised 49 PhD students, of which 29 as main supervisor, and 22 postdoc researchers. I am currently main supervisor of 4 Phd student and co-supervisor of 2.

Other relevant professional experiences

2020-2023	Statistics in Medicine, associate editor
2023-	New Royal Statistical Society journal in data science, associate editor
2021-	Bernoulli Society & Institute Mathematical Statistics, Committee on Special Lectures, chair
2004-2007	Journal of the Royal Statistical Society, Series B, associate editor.
2000-2005	Scandinavian Journal of Statistics, associate editor
2003-2014	Journal of Applied Statistics in Business and Industry, associate editor
2011-2020	STAT, International Statistical Institute - Wiley journal, co-editor and co-founder.
2012-2018	Scientific advisory board, e-Science for Cancer Prevention, Karolinska Institute, Stockholm
2020 -	Norwegian Centre for Molecular Medicine NCMM, Oslo, member of the board
2018 -2021	Simula@OsloMet, Centre for Digital Engineering, member Scientific Advisory Board
2017-2021	STATSCALE, EPSRC funded, Scientific Advisory Board, chair.
2012-	Statistics & Operations Research PhD Training Centre, Lancaster U, Advisory Board, chair
2018-2020	Royal Statistical Society, London, member of the council
2016-2017	ERC Advanced Grants, PE1 Mathematics, Panel member
2015-2018	Canadian Statistical Sciences Institute, Board of Directors, member
2007-2014	Centre Research in Statistical Methodology, Univ. Warwick, scientific committee, member
In the past	Member of scientific programme committees of many international conferences, invited speaker, leading positons (Bernoulli Society, Institute Mathematical Statistics, International Statistical Institute), evaluated science internationally (2022, Mathematics, ETH Zürich), evaluated prof. in 13 universities, including Oxford, Cambridge, Copenhagen, Warwick.

10-year track record

In total 125 peered reviewed papers with ca. 8000 citations, h-index 43 (Google Scholar).

Papers are listed here: https://scholar.google.com/citations?user=1h8UJ0cAAAAJ&hl=en

1. Kristensen V, Lingjærde OC, Russnes HG, Vollan HKM, **Frigessi** A, Børresen-Dale AL, Principles and methods of integrative genomic analyses in cancer, **Nature Reviews Cancer**, 2014, 14, 299–313 (First survey of methods in integrative high dimensional genomics, identifying future research lines.)

2. Haff IH, Aas K, **Frigessi** A, Lacal V, 2016. Structure learning in Bayesian Networks using regular vines. **Computational Statistics & Data Analysis**. 101:186-208. (First paper using vine copulae to learn network structure. I introduce vine copulae in the paper "Pair-copula constructions of multiple dependence", co-authored with Kjersti Aas, Claudia Czado and master student. That paper has ca. 1900 citation and is described as a "…landmark advance …" in Dependence Modeling: Vine Copula Handbook, H. Joe, D. Kurowicka, page 11. Pair copula construction, also called vines, has revolutionised modelling of dependence, is applied in all sciences, and used in commercial products, for example @aon.com. Recently discovered by the deep learning community, e.g., Sun Y, Cuesta-Infante A, Veeramachaneni K, "Learning

vine copula models for synthetic data generation." *Proceedings of the AAAI Conference on Artificial Intelligence*. 2019. In **Integreat** we will inject knowledge in the pair copulae and their parameters and use vines in ML models.)

3. Vitelli V, Sørensen Ø, Crispino M, **Frigessi** A, Arjas E, 2018. Probabilistic preference learning with the Mallows rank model, **Journal of Machine Learning Research** 18:1-49. (Solves a problem that was open for two decades, and suggests a new approach to recommender systems. R-package BayesMallows on CRAN.)

4. Rohrbeck C, Costain D, **Frigessi** A, 2018. Bayesian spatial monotonic multiple regression. **Biometrika**, 105.3: 691-707. (New method for spatial monotonic multiple regression with theoretical guarantees.)

5. Swanson DM, Lien T, Bergholtz H, Sørlie T, **Frigessi** A, 2019. A Bayesian two-way latent structure model for genomic data integration reveals few pan-genomic cluster subtypes in a breast cancer cohort. **Bioinformatics** 35(23):4886-4897. (A new Bayesian parametric model for integrative, unsupervised clustering across data sources. Injecting prior knowledge on samples and covariates.)

6. Crispino M, Arjas E, Vitelli V, Barrett N, **Frigessi** A, 2019. A Bayesian Mallows approach to nontransitive pair comparison data: How human are sounds? **The Annals of Applied Statistics**, 13(1)492-519. (Solving inconsistencies in expert opinions by Bayesian informative model-based learning from preference data, with application to musicology.)

7. Lai X, Geier O, Fleischer T, Garred Ø, Borgen E, Funke S, Kumar S, Rognes M, Seierstad T, Børressen-Dale AL, Kristensen V, Engebråten O, Köhn-Luque A, **Frigessi** A, 2019. Towards personalized computer simulation of breast cancer treatment: a multi-scale pharmacokinetic and pharmacodynamic model informed by multi-type patient data, **Cancer Research**, 79(16)4293-4304. (First mathematical model of solid tumour growth integrating multiple-type patient data. Mechanistic models carry knowledge into inference.)

8. Liu Q, Reiner AH, **Frigessi** A, Scheel I, 2019. Diverse personalized recommendations with uncertainty from implicit preference data with the Bayesian Mallows Model. **Knowledge-Based Systems**, v186, 1049602019 (A new Bayesian method for the diversity-accuracy dilemma in recommender systems.)

9. Engebretsen S, Engø-Monsen K, Aleem M., Gurley ES, **Frigessi** A, De Blasio BF, 2020. Time-aggregated mobile phone mobility data are sufficient for modelling influenza spread: the case of Bangladesh. **Journal of the Royal Society Interface,** 17(167), 20190809. (A new spatio-temporal stochastic model for influenza-like disease spread based on estimates of human mobility, informed by mobile phone mobility data. Inference by sequential ABC. Time-averaged mobility, preserving privacy more, is shown to be useful enough when modelling infectious diseases. We extended this model to Norway and Covid-19, developed a new sequential ABC which scales, so that it has been in regular use since April 2020 for surveillance and prediction in Norway, paper currently submitted.)

10. Storvik G, Palomares A, Engebretsen S, Rø G, Engø-Monsen K, Kristoffersen AB, De Blasio BF, **Frigessi** A, 2021. A sequential Monte Carlo approach to estimate the time varying reproduction number for Covid-19 compartmental models (with discussion). **J Roy. Stat. Soc.** (A) to appear. (JRSS discussion paper. A new sequential Monte Carlo that scales and has been in use weekly to make COVID predictions in Norway.)

Patent: U.S. Provisional Patent Application Serial No. 61/607,316, Inventors: Sorlie, T, Frigessi, A, Borresen-Dale, AL, Myhre, S, Mohammed H, Overgaard J, Alsner, J Tramm.T: A gene signature associated with efficacy of postmastectomy radiotherapy in breast cancer. Patent number: INVEN-32535/US-1/PRO

Invited presentations to internationally established conferences: (selection)
- 30th European Meeting of Statisticians, Amsterdam, invited speaker, 2015
- 27th Nordic Mathematics Congress, invited, Stockholm, 2016
- ENBIS-17, Napoli, key-note speaker, 2017
- KAUST workshop in statistics, Saudi Arabia, invited, 2017
- Institute Mathematical Statistics Annual Meeting, invited session and invited talk, 2018

- 62nd ISI World Statistics Congress, Kuala Lumpur, invited lecture, 2019
- CMStatistics (ERCIM), London, invited speaker, 2019
- Royal Statistical Society Annual Conference, Belfast, invited speaker, 2019
- Newton Institute, Cambridge, Covid-19 workshop, invited lecturer, 2020
- The American Physical Society COVID Research and Resources Group, invited webinar, 2021
- HiDATA webinar: Data Science in the Post-Covid World, Aalto Univ., invited speaker, 2021
- Neyman Seminar, Berkeley, 2022

Organisation of international conferences (membership in the steering or organising committee, selection)
- Chairman, organising committee of the 25th European Meeting of Statisticians, Oslo, 2005
- Scientific committee, 7th Bernoulli World Conference, Singapore, 2008
- Member of the scientific committee of EURANDOM, Eindhoven, 2004-2009.
- Member of Programme Committee, European meeting of Statistics Pireus, Greece, 2010
- Chairman, Scientific Programme Com., 9th World Congress in Probability and Statistics, Istanbul, 2012.
- World meeting of young statistician, funded by World Bank, Biometrika, Google, Istanbul, chair, 2012
- 3rd International Statistical Institute Regional Conference, Zambia, chair scientific committee, 2020/23
- Member of the scientific committee of 22nd EUROPEAN MEETING OF STATISTICIANS, Moscow, 2022

Prizes, awards, academy memberships:
- Elected member of the Royal Norwegian Academy of Sciences and Letters, Oslo, 2008.
- Elected member of the Norwegian Academy of Technological Sciences, Trondheim, 2008.
- Inven2 Idéprisen for the three best innovation projects at UiO and OUS, 2016
- Digital Life Norway prize for best transdisciplinary publication 2019
- IMA, Minneapolis, USA, Ordway distinguished researcher, 2020
- Knighted Cavaliere Ordine al Merito della Repubblica Italiana, Italy, 2021
- Sverdrup prize, honouring a prominent statistician in Norway, 2021