

Mohammad Ali Nilforooshan

CONTACT INFORMATION	LIC, Private Bag 3016, Hamilton 3240, New Zealand E-mail: mohammad.nilforooshan@lic.co.nz Website: https://nilforooshan.github.io ORCID: https://orcid.org/0000-0003-0339-5442 Google Scholar: https://goo.gl/iKbCoU GitHub: https://github.com/nilforooshan	
INTERESTS	Matrix Algebra Statistical methods applied to livestock genetic and genomic evaluation Putting biology into equations and equations into program codes Single-step genomic evaluation Computational biology Traveling	
EDUCATION	Swedish University of Agricultural Sciences, Dept. Animal Breeding and Genetics PhD in Animal Breeding and Genetics – Quantitative Genetics, June 2007 – May 2011	
AWARDS	<ul style="list-style-type: none"> • Grant from Interbull Centre for participation in the 9th World Congress on Genetics Applied to Livestock Production (2010), Leipzig, Germany • Grant from FUR foundation (SLU funds for internationalization of postgraduate studies) for participation in the 60th Annual meeting of the European Association for Animal Production (2009), Barcelona, Spain • Scholarship from the Guest Scholarship Program (2008) of the Swedish Institute • Grant from FUR foundation (SLU funds for internationalization of postgraduate studies) for participation in the 59th Annual meeting of the European Association for Animal Production (2008), Vilnius, Lithuania 	
SKILLS	Scientific: Matrix Algebra, Quantitative Genetics and General Animal Breeding, Statistics, "Big Data", Reviewer for scientific journals Programming: R, SAS, Fortran, Linux Shell scripting (Sed and Awk), Python, Markdown and RMarkdown, Git and GitHub, Docker, Julia (beginner), and C (beginner) Analytics: Designing, streamlining and documenting genetic/genomic evaluation pipelines; experienced in several computer packages such as ASReml, DFRe ml, MiX99 and BLUPF90	
PROFESSIONAL EXPERIENCE	LIC <i>Scientist – Quantitative Genetics</i>	May 2020 – Present
	LIC <i>Postdoctoral Research Fellow in Quantitative Genetics</i>	December 2018 – May 2020
	University of Otago , Dept. Mathematics and Statistics <i>Postdoctoral Fellow in Quantitative Genetics</i>	November 2015 – October 2018
	Swedish University of Agricultural Sciences , Dept. Animal Breeding and Genetics, Interbull Centre <i>Geneticist</i>	June 2012 – October 2015
	University of Nebraska-Lincoln , Dept. Statistics <i>Postdoctoral Research Fellow in Computational Biology</i>	September 2011 – May 2012

TEACHING	<ul style="list-style-type: none"> • Supervising a visiting PhD student to the Department of Mathematics and Statistics, University of Otago, August – October, 2018. • Teaching some lectures of the postgraduate course in Quantitative Genetics, held at the University of Otago, Dunedin, New Zealand, July – October, 2018. • Teaching some lectures of the postgraduate course in Quantitative Genetics, held at the University of Otago, Dunedin, New Zealand, July – October, 2017. • Teaching R programming, and giving several other talks in the University of Chapingo, Texcoco, Mexico, April 2015. • Teaching "Dairy Cattle Husbandry" in Kabootar-Abad school of Agriculture, Isfahan, Iran, September 2004 – June 2005.
SOFTWARE	<p>Nilforooshan, M.A. 2020. R package pedSimulate: Pedigree, Genetic Merit and Phenotype Simulation.</p> <p>Nilforooshan, M.A. 2019. R package mbend: Matrix Bending.</p> <p>Nilforooshan, M.A. 2019. R package ggroups: Pedigree and Genetic Groups.</p>
EDITORIAL CONTRIBUTIONS	Frontiers in Genetics – Section Livestock Genomics: Reducing the Environmental Footprint of Livestock Through Genomic Selection
PUBLICATIONS	<ul style="list-style-type: none"> • Nilforooshan, M.A., and H. Jorjani. 2021. INVITED REVIEW: A quarter of a century—International genetic evaluation of dairy sires using MACE methodology. <i>J. Dairy Sci.</i> In Press. doi:10.3168/jds.2021-20927 • Saavedra-Jiménez, L.A., R. Ramírez-Valverde, R. Núñez-Domínguez, A. Ruíz-Flores, J.G. García-Muñiz, and M.A. Nilforooshan. 2021. Effect of two phantom parent grouping strategies on the genetic evaluation of growth traits in Mexican Braunvieh cattle. <i>Rev. Mex. Cienc. Pec.</i> Accepted. • Harris, B., E. Reynolds, C. Couldrey, M.A. Nilforooshan, A. Winkelman, and R. Sherlock. 2021. Genomic evaluations for crossbreed dairy cattle. <i>J. Dairy Sci.</i> 104(Supplement 1): 356.S148. • Nilforooshan, M.A., D. Garrick, and B. Harris. 2021. Alternative ways of computing the numerator relationship matrix. <i>Front. Genet.</i> 12:1236. doi:10.3389/fgene.2021.655638 • Nilforooshan, M.A., and D. Garrick. 2021. Reduced animal models fitting only equations for phenotyped animals. <i>Front. Genet.</i> 12:372. doi:10.3389/fgene.2021.637626 • Nilforooshan, M.A. 2020. mbend: An R package for bending non-positive-definite symmetric matrices to positive-definite. <i>BMC Genet.</i> 21: 97. doi:10.1186/s12863-020-00881-z • Nilforooshan, M.A., and L.A. Saavedra-Jiménez. 2020. ggroups: An R package for pedigree and genetic groups data. <i>Hereditas</i> 157: 17. doi:10.1186/s41065-020-00124-2 • Nilforooshan, M.A. 2020. Memory-efficient self-cross-product for large matrices using R and Python. <i>J. Math. Comput. Sci.</i> 10(3): 497–506. doi:10.28919/jmcs/4457 • Nilforooshan, M.A. 2020. Updating genetic relationship matrices and their inverses: A methodology note. <i>Can. J. Anim. Sci.</i> 100(2): 292–298. doi:10.1139/CJAS-2019-0106 • Nilforooshan, M.A. 2020. Application of single-step GBLUP in New Zealand Romney sheep. <i>Anim. Prod. Sci.</i> 60(9): 1136–1144. doi:10.1071/AN19315 • Nilforooshan, M.A., and M. Lee. 2019. The quality of the algorithm for proven and young with various sets of core animals in a multibreed sheep population. <i>J. Anim. Sci.</i> 97(3): 1090–1100. doi:10.1093/jas/skz010 • Nilforooshan, M.A., J.H. Jakobsen, W.F. Fikse, B. Berglund, and H. Jorjani. 2014. Multiple-trait multiple country genetic evaluation of Holstein bulls for female fertility and milk production traits. <i>animal</i> 8(6) 887–894. doi:10.1017/S1751731114000895

- Behdad, S., M.A. Edriss, **M.A. Nilforooshan**, and A.H. Movassagh. 2013. Wool characteristics of Bakhtiari sheep and the correlated responses to selection for pre-weaning daily gain. *Indian J. Anim. Sci.* 83(1): 82–85.
- **Nilforooshan, M.A.** 2011. Multiple-trait multiple country genetic evaluation of fertility traits in dairy cattle. Uppsala : Sveriges lantbruksuniv., *Acta Universitatis Agriculturae Sueciae*, 1652-6880 ; 2011:31. ISBN 978-91-576-7566-8. Doctoral thesis.
- **Nilforooshan, M.A.**, W.F. Fikse, B. Berglund, J.H. Jakobsen, and H. Jorjani. 2011. Short communication: Quantifying bias in a single-trait international model ignoring covariances from multiple-trait national models. *J. Dairy Sci.* 94: 2631–2636. doi:10.3168/jds.2010-3863
- **Nilforooshan, M.A.**, J.H. Jakobsen, W.F. Fikse, B. Berglund, and H. Jorjani. 2010. Application of a multiple-trait multiple-country genetic evaluation model for female fertility traits. *J. Dairy Sci.* 93: 5977–5986. doi:10.3168/jds.2010-3437
- **Nilforooshan, M.A.** 2010. Contemporary grouping in mixed size dairy herds experiencing four seasons. *Turk. J. Vet. Anim. Sci.* 34: 129–135. doi:10.3906/vet-0710-18
- **Nilforooshan, M.A.**, A. Khazaeli, and M.A. Edriss. 2008. Effects of missing pedigree information on dairy cattle genetic evaluations. *Arch. Tierz., Dummerstorf* 51: 99–110. doi:10.5194/aab-51-99-2008
- Edriss, M.A., P. Hosseinia, M. Edrisi, H.R. Rahmani, and **M.A. Nilforooshan**. 2008. Prediction of second parity milk performance of dairy cows from first parity information using artificial neural network and multiple linear regression methods. *Asian J. Anim. Vet. Adv.* 3(4): 222–229. doi:10.3923/ajava.2008.222.229
- Hosseinia, P., M. Edrisi, M.A. Edriss, and **M.A. Nilforooshan**. 2007. Prediction of second parity milk yield and fat percentage of dairy cows based on first parity information using neural network system. *J. Applied Sci.* 7(21): 3274–3279. doi:10.3923/jas.2007.3274.3279
- Edriss, M.A., G. Dashab, A.A. Ghare Aghaji, **M.A. Nilforooshan**, and H. Movasagh. 2007. A study on some physical attributes of Naeini sheep wool for textile industry. *Pak. J. Biol. Sci.* 10(3): 415–420. doi:10.3923/pjbs.2007.415.420
- **Nilforooshan, M.A.**, and M.A. Edriss. 2007. Comparison of Holstein bull semen sources on milk traits in Isfahan province in Iran. *Arch. Tierz., Dummerstorf* 50: 71–83. doi:10.5194/aab-50-71-2007
- Edriss, M.A., **M.A. Nilforooshan**, and J.M. Sadeghi. 2006. Estimation of direct genetic and maternal effects for production traits of Iranian Holstein cows using different animal models. *Pak. J. Biol. Sci.* 9(4): 636–640. doi:10.3923/pjbs.2006.636.640
- Dashab, G., M.A. Edriss, A.A. Ghare Aghaji, H. Movasagh, and **M.A. Nilforooshan**. 2006. Wool fiber quality of Naeini sheep. *Pak. J. Biol. Sci.* 9(2): 270–276. doi:10.3923/pjbs.2006.270.276
- **Nilforooshan, M.A.**, and M.A. Edriss. 2004. Effect of age at first calving on some productive and longevity traits in Iranian Holsteins of the Isfahan province. *J. Dairy Sci.* 87: 2130–2135. doi:10.3168/jds.S0022-0302(04)70032-6
- **Nilforooshan, M.A.** 2003. Genetic Evaluation and Comparison between Domestic and Imported (Canada, USA, Europe) Sperms for Milk Yield, Fat Yield, and Fat Percentage in Some Dairy Farms of Isfahan Province. MSc thesis. doi:10.5281/zenodo.4297235

DATA AND CODE

- **Nilforooshan, M.A.**, D. Garrick, and B. Harris. 2021. Code & Data – Alternative Ways of Computing the Numerator Relationship Matrix. *figshare*, Journal contribution. doi:10.6084/m9.figshare.1349
- **Nilforooshan, M.A.**, and D. Garrick. 2021. R examples – Reduced Animal Models Fitting Only Equations for Phenotyped Animals. *figshare*, Journal contribution. doi:10.6084/m9.figshare.13369607.v1
- **Nilforooshan, M.A.** 2021. mbend: Data, Code & Results. *Mendeley Data*. doi:10.17632/kf3d8v8939.2
- **Nilforooshan, M.A.** 2021. Benchmarking matrix self-cross-products, using R and Python functions. *Mendeley Data*. doi:10.17632/vk8vy7ghnf.2

PROCEEDINGS

- **Nilforooshan, M.A.**, B. Auvray, and M. Lee. 2018. Animal-specific combining of the GRM and the NRM in single-step GBLUP. *11th World Congress on Genetics Applied to Livestock Production*, Auckland, New Zealand. February, 11–16, 2018. [poster file, paper]
- Pabiou, T., **M.A. Nilforooshan**, E. Venot, and K. Moore. 2015. Interbeef presents new

opportunities for beef farmers. *British Cattle Conference*, Telford, England. January 19–21, 2015.

- Pabiou, T., **M.A. Nilforooshan**, D. Laloe, E. Hjerpe, and E. Venot. 2014. Across-Country Genetic Parameters in Beef Cattle for Interbeef Weaning Weight Genetic Evaluation. *10th World Congress on Genetics Applied to Livestock Production*, Vancouver, Canada. August, 17–22, 2014. [poster file]
- Venot, E., T. Pabiou, E. Hjerpe, **M.A. Nilforooshan**, A. Launay, and B. Wickham. 2014. Benefits of Interbeef International Genetic Evaluations for Weaning Weight. *10th World Congress on Genetics Applied to Livestock Production*, Vancouver, Canada. August, 17–22, 2014.
- Mäntysaari, E., and **M.A. Nilforooshan**. 2014. Effect of the size of the reference population on the validation reliability of national genomic evaluations. *Interbull Meeting*, Berlin, Germany. May 20–21, 2014.
- **Nilforooshan, M.A.** 2014. A review of the validation of national genomic evaluations. *Interbull Bulletin*. 48: 111–117. *Interbull Meeting*, Berlin, Germany. May 20–21, 2014. [slides file]
- **Nilforooshan, M.A.**, and E. Hjerpe. 2014. Interbeef report on weaning genetic evaluation, performed in March 2014 for Charolais and Limousin. *Interbeef Technical Meeting*, Uppsala, Sweden. March 10, 2014.
- Braillon, L., and **M.A. Nilforooshan**. 2013. Review of the Interbeef proof publication proposal. *Interbeef Technical Meeting*, Nantes, France. August 27, 2013.
- **Nilforooshan, M.A.**, E. Hjerpe, V. Palucci, and J. Dürr. 2013. Interbeef report on weaning genetic evaluation for Charolais and Limousin. *Interbeef Technical Meeting*, Aarhus, Denmark. March 27–28, 2013.
- **Nilforooshan, M.A.** 2012. Report on the weaning weight phenotypic data editing for Charolais and Limousin. *Interbeef Technical Meeting*, Uppsala, Sweden. December 6–7, 2012.
- Jorjani, H., J. Jakobsen, **M.A. Nilforooshan**, E. Hjerpe, B. Zumbach, V. Palucci, and J. Dürr. 2011. Genomic Evaluation of BSW Populations. InterGenomics: Results and Deliverables. *Interbull Bulletin*. 43: 5–8. *Interbull Technical Workshop*, Guelph, Ontario, Canada. February 27–28, 2011. [slides file]
- **Nilforooshan, M.A.**, L. Rönnegård, and H. Jorjani. 2010. Various statistical models for prediction of SNP effects from a multi-national/breed reference population. *9th World Congress on Genetics Applied to Livestock Production*, Leipzig, Germany. August 1–6, 2010. [poster file]
- **Nilforooshan, M.A.**, B. Zumbach, J. Jakobsen, A. Loberg, H. Jorjani, and J. Dürr. 2010. Validation of national genomic evaluations. *Interbull Bulletin*. 42: 56–61. *Interbull Meeting*, Riga, Latvia. May 31 to June 4, 2010. [slides file]
- **Nilforooshan, M.A.** 2009. Developing the method of estimating genetic similarity between populations. *60th Annual meeting of the European Association for Animal Production*, Barcelona, Spain, Book of Abstracts No. 15: 610. [slides file]
- **Nilforooshan, M.A.**, J. Jakobsen, F. Fikse, B. Berglund, and H. Jorjani. 2009. MT–MACE for female fertility and milk yield. *Interbull Bulletin*. 40: 68–71. *Interbull Meeting*, Barcelona, Spain. August 21–24, 2009. [slides file]
- **Nilforooshan, M.A.** 2009. International genetic evaluations of fertility traits using MT–MACE. Faculty research day, Faculty of Veterinary Medicine and Animal Science, Swedish University of Agricultural Sciences, Uppsala, Sweden. December 7, 2009.
- **Nilforooshan, M.A.** 2009. International genetic evaluations of fertility traits using MT–MACE. 80th Anniversary of the Department of Animal Breeding and Genetics, Swedish University of Agricultural Sciences, Uppsala, Sweden, June 4, 2009.
- **Nilforooshan, M.A.**, J. Jakobsen, F.W. Fikse, B. Berglund, and H. Jorjani. 2009. International genetic evaluations for female fertility traits using multi-trait MACE. *Interbull Bulletin*. 39:99–102. *Interbull Workshop on Genomic Information in Genetic Evaluations*, Uppsala, Sweden. January 26–29, 2009. [slides file]
- **Nilforooshan, M.A.**, F.W. Fikse, and H. Jorjani. 2008. International genetic evaluations of fertility traits considering more than one trait per country. *59th Annual meeting of the European Association for Animal Production*, Vilnius, Lithuania, Book of Abstracts No. 14: 268. [slides file]

EXTENSION

Papers in Farsi