CURRICULUM VITAE

Silvia Figini
e-mail: silvia.figini@unipv.it
Tel: 0382984661

Dal 2018 Professore Ordinario presso l'Università degli studi di Pavia (titolare degli insegnamenti: Statistica, Statistica Economica e Data Science: aspetti metodologici e computazionali).

Dal 2018 Vice Coordinatore dottorato internazionale in Computational Mathematics and Decision Sciences (http://compmat.unipv.it/) – in collaborazione con l'Università della Svizzera Italiana, il Dipartimento di Matematica e di Fisica dell'Università degli studi di Pavia.

Dal 2018 Direttore del BioData Science, centro di ricerca finanziato dalla Fondazione IRCCS Mondino per lo sviluppo di modelli matematici, di machine learning e deep learning applicati alla medicina.

Dal 2019 Delegata del Rettore per l'orientamento in ingresso.

Titoli

A.A. 2006-2007 PHD IN STATISTICS Università Luigi Bocconi di Milano – Tesi: "Bayesian variable and model selection for Customer Lifetime Value".
A.A. 2000-2001 Laurea in Economia e Commercio presso l'Università degli Studi di Pavia, indirizzo di Metodi Quantitativi per l'Economia e la Finanza. – Tesi: "Analisi Statistiche delle corrispondenze per la classificazione e l' e-CRM".

Interessi di ricerca
Machine learning; Metodi statistici e matematici predittivi; Statistica Bayesiana; Algoritmi di data science.

Posizioni Accademiche ricoperte
2013-2018 Professore Associato per il settore 13D1 (SECS-S/01 - Statistica) - Università degli Studi di Pavia.

2010 - 2013 Ricercatore per il settore 13D1 (SECS-S/01 - Statistica) - Università degli Studi di Pavia.

2008 – 2010 Ricercatore a tempo determinato (RTD tipo A) per il settore 13D2 (SECS-S/03 – Statistica Economica) - Università degli Studi di Pavia.

Incarichi istituzionali
Dal 2019 Delegata del Rettore per l'orientamento in ingresso.
(2012 – 2015) Membro della Giunta del Dipartimento di Scienze Politiche e Sociali per lo scorcio del triennio 2012/2015.
(2015 – 2017) Membro del Nucleo di Valutazione dell'Università degli Studi di Pavia.
Dal 2016 Membro del Nucleo di Valutazione dell'Istituto di Studi Superiori Universitari IUSS Pavia.
Dal 2016 Membro commissione paritetica Dipartimento Scienze Politiche e Sociali.
Dal 2017 Membro commissione ricerca Dipartimento Scienze Politiche e Sociali.

Soggiorni di ricerca all'estero
University of Cambridge, *Department of Pure Mathematics and Mathematical Statistics*; **University of Umea,** *Department of Statistics and Business School of Economics*; **University of Aalto**, *Department of Statistics and Computer Science*; **Dublin City University**, *Department of Statistics;* **University of Edimburgh**, *Credit Research Centre;* **Universitité Paris 1 Panthéon-Sorbonne**, *Maison des sciences Economiques.*

Interventi presso sedi istituzionali
Marzo 2015: "Data science and social network analysis for anti money laundering" audizione presso il ***Ministero dell'Economia e delle Finanze***.

Aprile 2015: "Reti sociali e antiriciclaggio: Metodologia ed evidenze empiriche su dati bancari" audizione presso ***Unità di Informazione Finanziaria – Banca d'Italia*** (Workshop "Metodi quantitativi e contrasto alla criminalità economica").

Giugno 2017: “Data science models to predict terrorist events” audizione presso la ***Presidenza del Consiglio dei Ministri.***

Attività di referaggio per prestigiose riviste internazionali (es. *Annals of Applied Statistics, European Journal of Operational Research; Applied Stochastic Models in Business and Industry; Methodology and Computing in Applied Probability; Journal of Quality Technology and Quantitative Management; Statistical Methods and its applications; Journal of the Operational Research Society etc.).*

Partecipazione a progetti di ricerca europei

SYRTO 2013-2016 (Progetto Europeo): “***Risk models for finance***” – Partner coinvolti: *Centre National De La Recherche Scientifique (CNRS)* – Centre d'Economie de la Sorbonne – Axe Finance (CES-Finance) ; MIT Massachusetts Institute of Technology Department of Operation Research Boston College; Athens University of Economics and Business – Research Center (AUEB-RC); VU University Amsterdam; Banca Centrale Europea; Università Cà Foscari di Venezia; Università di Pavia.

MUSING 2006-2010 (Progetto Europeo): “***Multy Industry semantic based next generation business intelligence***” – Partner coinvolti oltre unipv: Università di Pisa, Università di Insbruck, Università di Sheffield, DFKI, MPS, Consorzio Nazionale Ricerche di Pisa, Credit Reform (Monaco), KPI (Israele), Università di Pavia.

Partecipazione a progetti di ricerca nazionali

1. **P.R.I.N. 2013-2016** on “Multivariate Models for Risk Assessment”
2. **P.R.I.N. 2009-2010** on “Multivariate Methods for the evaluation of the quality and of the risks in academic context”
3. **P.R.I.N. 2007-2008** on “Multivariate statistical methods for the evaluation of public services”
4. **F.I.R.B. 2006-2009** on “Data mining methods for small and medium enterprises”

Elenco delle Pubblicazioni

Sezione 0: Working paper – under review

1. (2020) Figini S. and Qyrana M. *Multicollinearity Detection via random matrix theory*, submitted.
2. (2020) Figini S. and Ballante E. *A new approach in model selection for ordinal target variables*, submitted.

3. (2020) Galvani M., Bardelli C., Figini S., Muliere P. *A Bayesian nonparametric learning approach to ensemble models using the proper Bayesian Bootstrap*, submitted.

4. (2020) Felisaz P., Colelli G., Ballante E., Solazzo F., Paoletti M., Germani G., Santini F., Deligianni X., Bergsland N., Monforte M., Tasca G., Ricci E., Bastianello S., Figini S. and Pichiecchio A. *Texture analysis and machine learning to predict muscle water T2 and fat fraction in Facioscapulohumeral muscular dystrophy*, submitted.

5. (2019) Ballante E., Galvani M., Uberti P., Figini S. *Polarized Classification Tree Models: theory and computational aspects*, submitted

Sezione 1: Articoli su riviste internazionali

1. Mensi, M., Balottin, L., Rogantini, C., Orlandi, M., Galvani, M., Figini, S., Chiappedi, M., Balottin, U. (2020) Focus on family functioning in anorexia nervosa: new perspectives using the Lausanne Trilogue Play**, *Psychiatry Research***, vol. 288.

2. Figini S., Uberti P. and Torrente L. (2019) Model of models: a new perspective to deal with model uncertainty, to appear in ***Far East Journal of Theoretical Statistics***.

3. Figini S. and Uberti P. (2019) Uncertainty interval to assess performances of risk models, to appear in ***Advances and Applications in Statistics***.

4. Galvani M., Bardelli C, Bottiroli S. and Figini S. (2019) A two stage modeling approach for chronic migraine data, to appear in ***Journal of Biostatistics***.

5. Figini S. and Galvani M. (2019) Machine learning techniques to understand the dynamics of terrorist events, ***Advances and Applications in Statistics***, Volume 56, Number 1, 2019, Pages 53-76.

6. Milanese C., Payán-Gómez C., Galvani M., González NM., Tresini M., Abdellah SN., van Roon-Mom WMC., Figini S., Marinus J., van Hilten JJ., Mastroberardino PG. (2019) Peripheral mitochondrial function correlates with clinical severity in idiopathic Parkinson’s disease – to appear in ***Journal of Movement Disorders***.

7. Figini S., Maggi M. and Uberti P. (2018) The market rank indicator to detect financial distress, Econometrics and Statistics, https://doi.org/10.1016/j.ecosta.2017.12.001Figini S., Bonelli F., Giovannini E.

(2017) Solvency prediction for Small and Medium Enterprises in banking, ***Decision Support Systems***, vol. 102, pp. 91-97.

8. Figini S. and Giudici P. (2017) Credit risk assessment with Bayesian model averaging, in ***Communications in Statistics - Theory and Methods***, vol. 46, pp. 9507-9517.

9. Figini S., Savona R., Vezzoli M. (2016) Corporate Default Prediction Model Averaging: A Normative Linear Pooling Approach, in ***Intelligent Systems in Accounting Finance and Management,*** Vol. 23, Issue 1, pp. 6–20.

10. Figini S. Gao L. and Giudici P. (2015) Bayesian Operational Risk Models, ***Journal of Operational Risk***, vol. 10, pp. 45-60.

11. Gigliarano C., Figini S., Muliere P. (2014) Making Classifier Performance Comparisons when ROC Curves intersect, ***Computational Statistics and data analysis***, vol. 77, pp. 300-312.

12. Figini S., Giudici P. (2013) Measuring risk with ordinal variables, ***Journal of the Operational Risk***, vol.8(2), pp. 35-43.

13. Figini S., Uberti P. (2013) Concentration measures in risk management, ***Journal of the Operational Research Society***, vol. 64, pp. 718-723.

14. Cutillo L., Carissimo A.M. and Figini S., (2012) Network Selection: A Method for Ranked Lists Selection, ***PLOSOne***, vol. 7(8).

15. Dridi A., Figini S., Giudici P. and Limam M. (2011) A financial Stress Index for the analysis of XBRL data, ***Journal of Financial Transformation,*** pp. 219-223.

16. Figini S. and Giudici P., (2011) Statistical Merging of Rating Models, ***Journal of the Operational Research Society***, vol. 62, 1067-1074.

17. Figini, S., Kenett, R. and Salini S. (2010) Optimal scaling for risk assessment: merging of operational and financial data, ***Quality and Reliability Engineering International***, vol. 26(8), pp. 887-897.

18. Figini, S. and Giudici P. (2010) Statistical Local Models for Customer Lifetime Value, ***Advances and Applications in Statistics***, vol. 18(1), pp. 41 – 55.

19. Figini, S. e Uberti P., (2010): Model assessment for predictive classification models, ***Communications in Statistics Theory and methods***, vol. 39(18), pp. 3238-3244.

20. Figini, S. (2010): Penalised models to estimate customer survival, ***Statistical methods and applications***, vol. 19, issue 1, 141-150.

21. Figini, S. (2010): Statistical local models for customer satisfaction data, in ***Journal of quality technology and quantitative management***, Vol. 7, N.1, pp. 69-82.

22. Uberti, P. and Figini S. (2010): How to measure single-name credit risk concentrations, to appear in ***European Journal of Operational Research***, vol. 202(1), 232-238.

23. Figini, S., Giudici, P., e Uberti P. (2010): A threshold based approach to merge data in financial risk management, ***Journal of Applied Statistics***, vol. 37(11), pp. 1815-1824.

24. Figini, S., De Quarti, E. and Giudici (2009): Churn risk mitigation models for student's behaviour, in ***Electronic Journal of Applied Statistical Analysis***, Vol. 2, N.1, pp. 37 – 57.

25. Figini S. and Giudici P. (2009) String analysis for interaction detection, ***Journal of Applied Statistics***, vol. 21, pp.281-288.

26. Figini, S. e Giudici, P. (2009): Bayesian Churn Models, in ***Advances and Applications in Statistical Sciences***, Vol. 1, N. 2, pp. 285-310.

27. Figini, S., De Giuli, E., Giudici, P. and Fantazzini, D. (2009): Enhanced Credit Default Models for Heterogeneous SME Segments, in ***Journal of Financial Transformation*** Vol. 25 N.1, pp. 31-39.

28. Figini, S. e Giudici, P. (2009): Statistical models for e-learning data, in ***Statistical methods and applications***, vol. 18, pp. 293-304.

29. Fantazzini D. and Figini S. (2009): Random Survival Forest models for SME Credit Risk Measurement, in ***Methodology and computing in applied probability***, vol. 11, pp. 29-45.

30. Fantazzini, D. and Figini S. (2009): Default Forecasting for Small-Medium Enterprises: Does Heterogeneity Matter? in ***International Journal of Risk Assessment and Management*** Vol. 11, No.1(2) pp. 138-163.

31. Figini, S., Giudici, P., Uberti, P. and Sanyal, A. (2007) A statistical method to optimize the combination of internal and external data in operational risk measurement, in ***Journal of Operational Risk***, Vol 2(4), pp. 69-78.

32. Baldini, P., Figini S. and Giudici, P. (2006): Nonparametric Approaches for e-Learning Data in ***Lecture Notes in Computer Science***, 4065, pp. 548 – 560.

33. Figini, S. e Giudici, P. (2005): Link Analysis for fraud detection, ***Italian Journal of Applied Statistics***, Vol. 17 – Fascicolo 3 – pp. 389 – 397.

Sezione 2: Contributi su monografie di ricerca internazionali

1. Figini, S., Salini, S. (2009): ***Bayesian merging and calibration for OpR***, to appear in "*Operational risk management a practical approach to intelligent data analysis*", *Wiley* London.

2. Figini, S. (2009): ***Credit risk estimation for SME***, to appear in *Handbook of Research on Data Mining in Public and Private Sectors: Organizational and Government Applications* (book edited by Prof. Antti Syväjärvi and Prof.. Jari Stenvall, University of Lapland, Finland and University of Tampere, Finland).

3. Figini, S. (2008): ***Data Mining for Lifetime Value estimation***, to appear in *Encyclopedia of Data Warehousing and Mining* - 2nd Edition Editor: John Wang.

4. Figini, S. (2008): ***Predictive dynamics models for SMEs***, in *"Data Analysis and Classification: from the exploratory to the confirmatory approach", Springer* (series on Studies in Classification, Data Analysis and Knowledge organisation).

5. Cerchiello, P., Figini, S. and Giudici, P.(2007): ***Data mining, for business and industry*** (editors: Dave Stewardson Douglas C. Montgomery Tony Greenfield and Shirley Coleman), in Statistical Practice in Business and Industry, *Wiley* London, pp. 163-184.

6. Figini, S., Giudici, P., Polla, D., e Galliano, C. (2005): ***Survival Analysis Models to Estimate Customer Lifetime Value***, Fifth *IEEE International Conference on Data Mining (ICDM-2005), IEEE Computer Society Press*, pp.114-124.

Sezione 3: Comunicazioni su atti di convegno internazionali

1. Figini S. e Bardelli C. (2020) Machine learning prediction for accounting system, Proceedings of the ***Italian statistical society***.

2. Figini S., Ballante E., Molteni S. and Mensi M. (2020) At risk mental status analysis: a comparison of model selection methods for ordinal target variable, Proceedings of the ***Italian statistical society***.

3. Figini S. e Ballante E. (2019) A new methodological perspective for classification model selection, ***International Conference on Optimization and Decision Science***.

4. Signorini S., Luparia A., Cappagli G., Perotto E., Antonini M., Morelli F., Ballante E., Figini S. (2019) Visual Function Score: a new assessment tool for visual disorders, ***The Child Vision Society's 2019 Biannual Meeting***, Pisa 15/17 June 2019

5. Paoletti M., Diamanti L., Solazzo, Ballante E., Vitale R., Belatti E., Savini G., Felisaz P., Faggioli A., Figini S., Deligianni, F. Santini, N. Bergsland and A. Pichiecchio (2019) Muscular involvement in amyotrophic lateral sclerosis (ALS) assessed by quantitative MRI, ***Imaging in Neuromuscular diseases*** – Berlin.

6. Galavani M., Ballante E., Figini S. and Uberti P. (2019) A new polarization measure for decision tree models, ***International Conference on Optimization and Decision Science***.

7. Galvani M., Bardelli C., Figini S., Muliere (2019) Generalized Bayesian Ensemble modeling: methodological and computational aspects, ***European Meeting of Statisticians.***

8. Figini S. e Ballante E. (2019) Polarized Classification Tree Models, ***International workshop on Computational Mathematics, Statistics and Machine Learning***.

9. Figini S., Bardelli M. and Galvani M. (2019) A New Ensemble Tree Model based on Bayesian Bootstrap, ***International Conference on Optimization and Decision Science***.

10. Figini S. and Galvani Marta (2018) Optimal model selection in credit risk modeling, 29th ***European Conference on Operational Research***, Valencia.

11. Figini S. (2017). Optimal model selection in binary predictive data science models. In: Proceeding of the 11th ***International Conference on Computational and Financial Econometrics*** (CFE 2017).

12. Figini S., Mario Maggi, Pierpaolo Uberti (2017). New indicators in systemic risk analytics: Theory and applications. In: CFE-CME 2017 P ROGRAMME AND A BSTRACTS 11th ***International Conference on Computational and Financial Econometrics*** (CFE 2017). ISBN: 978-9963-2227-4-2, Londra (UK), 16-18 dicembre, 2017.

13. Figini S., Gigliarano C. and Muliere P. (2014) Assessment and comparison of survival models using concentration indices, ***Computational Financial Econometrics*** 2014.

14. Figini S., Vezzoli M. (2013) Ensemble models: theory and applications, International Conference of the ***Royal Statistical Society*** (selected paper), New Castle.

15. Figini S., Vehtari A. (2013) Gaussian Process Classification And Duration Models For Credit Risk, ***International Federation of Classification Societies***, Tilburg.

16. Figini S., Vezzoli M. (2013) Model Averaging For Credit Risk Modelling, ***International Federation of Classification Societies***, Tilburg.

17. Figini S., Madormo F. (2013) Risk estimation and assessment using survival models for credit risk data, International Conference on ***Computational and Financial Econometrics***, London.

18. Figini S., Giudici P. (2012) Improving model averaging in credit risk analysis, ***International Conference on Computational Statistics***, Cyprus.

19. Figini S. (2012). Bayesian model averaging for financial evaluation. Proceedings of the ***Italian statistical society***.

20. Figini S., Cutillo L. and Carissimo A. (2011): Outlier detection in credit risk multivariate data via rank aggregation, *Proceedings of the* ***4th International Conference of the ERCIM*** *WG, London.*

21. Figini S. (2011): A note on additively decomposable inequalities for risk measurement, *Proceedings of the* ***Classification and Data Analysis Group*** *of the Italian Statistical Society.*

22. Figini S., Gao L. (2011): Bayesian efficient capital at risk estimation, *Proceedings of the International conference ENBIS-DEINDE 2011,* ***European Network for Business and Industrial Statistics & DEsign of INDustrial Experiments***.

23. Figini S. (2011): Bayesian Extreme Value Analysis of operational risk data, *Proceedings of the **Italian Statistical Society***.

24. Figini, S. (2010): Risk tendency measures for ordinal variables, *Proceedings of the **Italian Statistical Society***.

25. Figini S., Giudici P. and Uberti P. (2010): Concentration measures for risk analysis, *Proceedings of the **Classification and Data Analysis Group** of the Italian Statistical Society.*

26. Figini S. and Grossi L. (2010): Robust estimation and prediction for credit risk models, *Proceedings of the **Classification and Data Analysis Group** of the Italian Statistical Society.*

27. Figini, S., Kenett, R. e Giudici, P. (2009): Integrating Operational and Financial Risk Assessments, ***ENBIS9 meeting***, Gothenburg.

28. Figini, S. and Sayago, J. T. (2009): Longitudinal models for market reputation and risk, in *Proceedings of the **Italian Statistical Society***, pp.263-266.

29. Figini, S. (2009): Local statistical models for variables selection, in *Proceedings of the **Classification and Data Analysis Group** of the Italian Statistical Society*, pp. 489-492.

30. Figini, S. (2009): Statistical models for XBRL data, ***EURISBIS*** 2009.

31. Figini, S. (2009): Non linear rating models for SMEs, ***EURISBIS*** 2009.

32. Figini, S. (2009): Predictive rules induction via string analysis, Multivariate methods and models for evaluating public services, Rimini.

33. Figini, S. (2008): Model clustering and model averaging, in *Proceedings of the **Classification and Data Analysis Group** of the Italian Statistical Society*, pp.125-128.

34. Figini, S. e Giudici, P. (2008): Methodological aspects to measure credit risk for SME, in *Proceedings of the **Italian Statistical Society***.

35. Cerchiello, P., Figini, S. e Giudici, P. (2007): Applying data mining methods to business and industry, in *Proceedings of **ENBIS** Joint Conference 2007.*

36. Brooks, S.P., Figini, S. e Giudici, P. (2007): Bayesian models to estimate customer survival, in *Proceedings of **ISBA Valencia***

37. Figini, S., Giudici, P. e Fantazzini, D. (2007): Longitudinal predictive models for SMEs, in *Proceeding of the 2007 intermediate* ***conference – Risk and Prediction – of the Italian Statistical Society***, pp. 551-552.

38. Figini, S. e Fantazzini, D. (2007): Default forecasting for small medium enterprises, in *Proceeding of* ***S.Co.2007***, *Venezia*, pp. 219-224.

39. Figini, S., Giudici, P. and Fantazzini, D. (2007): Predictive dynamic models for SMEs, in *Proceedings of the* ***Classification and Data Analysis Group*** *of the Italian Statistical Society, Macerata,* pp. 193-196.

40. Figini, S. e Roccato, A. (2007): How to improve predictive models for database marketing applications, in *Proceedings of the* ***Classification and Data Analysis Group*** *of the Italian Statistical Society, Macerata,* pp. 281-284.

41. Figini, S. (2006): Customer relationship: a survival analysis approach, in: Proceedings of ***COMPSTAT 2006***, Roma , pp. 959-966.

42. Figini, S. e Giudici, P. (2006): Statistical models to analyse customer life cicle in *Proceeding of XLIII* ***Italian statistical society*** *meeting, pp. 541 - 544* .

43. Figini, S. e Giudici, P. (2005): Feature selection in genomic predictive mining, in *Proceedings of the* ***Classification and Data Analysis Group*** *of the Italian Statistical Society, pp. 249-252.*

44. Figini, S. e Giudici, P. (2004): Modelli previsivi per text mining (in italiano), in *Proceedings of the* ***SAS CAMPUS****, pp. 59-66, Firenze.*

45. Figini, S. e Giudici, P. (2001): Correspondence analysis for CRM (in italiano), in *Proceedings of* ***SMDM01***, *Pavia* .

Sezione 4: Relazioni invitate a convegni internazionali

1. Figini S. (2017) Credit data science risk models for SMEs, International workshop “***Data science in Finance and Insurance***”.

2. Figini S., Gigliarano C. e Muliere P. (2014) Assessment and comparison of survival models using concentration indices, ***Computational and Financial Econometrics*** Pisa.

3. Figini S., Gigliarano C. e Muliere P. (2013) On discrimination indices for survival models, ***Computational and Financial Econometrics*** London.

4. Figini S. e Madormo F. (2013) Risk estimation and assessment using survival models for credit risk data, ***Computational and Financial Econometrics*** London.

5. Figini S., e Giudici, P. (2012) Model uncertainty in credit rating models, ***Computational and Financial Econometrics*** Oviedo.

6. Figini S., e Giudici, P. (2012): Improving Model averaging in credit risk analysis, ***COMPSTAT***, Cipro.

7. Figini, S., e Kenett, R. (2009): Integrating Operational and Financial Risk Assessments, ***ENBIS9 meeting***, *Gothenburg*.

8. Figini, S. (2009): Statistical models for XBRL data, EURISBIS 2009, ***International Society of Business and Industrial Statistics meeting***, *Cagliari.*

9. Figini, S., e Giudici P. (2009): Non linear rating models for SMEs, EURISBIS 2009, ***International Society of Business and Industrial Statistics***, *Cagliari.*

10. Figini, S. (2008): Model clustering and Model averaging, ***Classification and Data Analysis Group of the Italian Statistical Society meeting***, *Caserta.*

11. Brooks, S.P., Figini, S. e Giudici, P. (2007): Bayesian models to estimate customer survival, ***ISBA meeting*** *Valencia.*

12. Figini, S. and Giudici, P. (2005): Bayesian Feature selection for the estimation of customer lifetime value, ***M2005, Data Mining Conference***, *Las Vegas.*

Sezione 5: Tesi

1. Figini, S. (2007): Bayesian variable and model selection for Customer Lifetime Value, Tesi di dottorato.

2. Figini, S. (2001): Analisi Statistiche delle corrispondenze per la classificazione e l' e-CRM, Tesi di laurea.