

ELISA PERRONE

CONTACT INFORMATION	5612 AE, Groene Loper 5 Eindhoven University of Technology Eindhoven, Netherlands	+1 617-415-6307 e.perrone@tue.nl www.elisaperrone.info
CURRENT POSITION	Eindhoven University of Technology , Eindhoven (NL) <i>Assistant Professor</i>	
RESEARCH INTERESTS	Mathematical and Applied Statistics, Dependence models and Copulas, Algebraic Statistics, Design of Experiments.	
EDUCATION	Johannes Kepler University Linz (JKU Linz) , Linz, Austria Ph.D., Mathematics, April 2016 Dissertation Title: “Optimal design for copula models”. Advisors: Prof. W. G. Müller and Prof. E. P. Klement University of Salento , Lecce, Italy M.S., Mathematics, July 2012 B.S., Mathematics, December 2008	
RESEARCH EXPERIENCE	Eindhoven University of Technology , Eindhoven, Netherlands <i>Assistant professor (tenure track)</i> Department of Mathematics and Computer Science Section Stochastics, Statistics group <ul style="list-style-type: none">• Tenure tracker of the Designing Systems for Informed Resilience Engineering (DeSIRE) project, i.e., a joint interdisciplinary program of the four technical universities in the Netherlands on resilience engineering.	06/2020 - present
	University of Massachusetts Lowell , Lowell, MA USA <i>Assistant professor (tenure track)</i> Department of Mathematical Sciences <ul style="list-style-type: none">• Conducted interdisciplinary research among the fields of discrete geometry, statistics, and applications; Collaborates worldwide with researchers with background in pure mathematics, statistics, and meteorology	08/2019 - 05/2020
	Massachusetts Institute of Technology , Cambridge, MA USA <i>Postdoctoral Fellow</i> Institute for Data, Systems and Society, and Laboratory for Information & Decision Systems (host Prof. C. Uhler) <ul style="list-style-type: none">• Principal investigator of the project “Geometry of discrete copulas for weather forecasting”; Built novel bridges between the fields of discrete geometry, statistics and applications through the study of discrete copulas	03/2017 - 02/2019
	Austrian Center for Weather Forecasting (ZAMG) , Vienna, Austria <i>Research Intern</i> Department of weather forecasting models <ul style="list-style-type: none">• Collaborated with meteorologists to conduct evaluation, calibration, and validation of weather forecasting models. Led the application of copula-based methods to weather data	08/2016 - 01/2017

IST Austria, Klosterneuburg, Austria

Postdoctoral Associate

05/2016 - 01/2017

Student Intern

09/2015 - 04/2016

Uhler Group

- Established connections between discrete copulas and polytopes studied in discrete geometry; Identified potential applications of the developed theory to attack weather forecasting problems

JKU Linz, Linz, Austria

Research and Teaching Assistant

11/2014 - 08/2015

Research Assistant

08/2012 - 10/2014

Institute of Applied Statistics

- Advanced the state-of-the-art of the optimal experimental design theory to allow for the application of copula models; Supervised on the development of the R package “docopulae”

GRANTS

Austrian National Science Fund (FWF)

Erwin Schrödinger Postdoctoral Fellowship, Principal Investigator

160.960,00 €

Project Nr J-3968; (acceptance rate 30%)

03/2017 - 02/2019

PUBLICATIONS

* **E. Perrone**, I. Schicker, and M. Lang. A case study of empirical copula methods for the statistical correction of forecasts of the ALADIN-LAEF system. *Accepted for publication in Contributions to Atmospheric Sciences*, (2020).

F. Durante and **E. Perrone**. Stochastic dependence with discrete copulas. *Accepted for publication in SIS 2020*, (2020).

* **E. Perrone**, L. Solus, and C. Uhler. Geometry of Discrete Copulas. *Journal of Multivariate Analysis*, vol 172, pp. 162–179, (2019).

* **E. Perrone**, A. Rappold, and W. G. Müller. D_s -optimality in copula models. *Statistical Methods & Applications*, vol 26, No.3, pp.403–418, (2017).

* **E. Perrone** and W. G. Müller. Optimal designs for copula models. *Statistics*, vol 50, No.4, pp. 917–929, (2016).

F. Durante and **E. Perrone**. Asymmetric copulas and their application in design of experiments. In: *On Logical, Algebraic and Probabilistic Aspects of Fuzzy Set Theory*. Springer book series “Studies in Fuzziness and Soft Computing”, vol 336, pp. 157–172, (2016).

* R. Pappadà, **E. Perrone**, F. Durante, and G. Salvadori. Spin-off Extreme Value and Archimedean copulas for estimating the bivariate structural risk. *Stochastic Environmental Research and Risk Assessment*, vol 30, No.1, pp. 327–342, (2016).

E. Perrone. A study of robustness in the optimal design of experiments for copula models. *Stochastic Models, Statistics and Their Applications, Springer Proceedings in Mathematics & Statistics*, vol 122, pp. 335–342, (2015).

* G. Salvadori, F. Durante, and **E. Perrone**. Semi-parametric approximation of the Kendall’s distribution function and multivariate Return Periods. *Journal de la Société Française de Statistique*, vol 154, No.1, pp. 151–173, (2013).

* *authoring order determined by contribution, not alphabetically.*

TEACHING
EXPERIENCE

JKU Linz, Linz, Austria

Statistics for Social Sciences and Economics, Instructor Fall 2014

Duties included shared administrative responsibilities with tutor assistants, grading final exams, and fielding of student inquiries.

Statistical projects, Instructor

Methods for statistical projects, Instructor Spring 2015

Duties included lectures, office hours, project supervisions, and grading final exams.

University of Massachusetts Lowell, Lowell, MA, USA

Applied Statistics (MATH 3850 - 201), Instructor Fall 2019

Applied Statistics (MATH 3850 - 201), Instructor Spring 2020

Linear Statistics Modeling and Regression (MATH 5910 - 201), Instructor Spring 2020

Duties included lectures, office hours, making and grading homeworks and exams.

SELECTED
INVITED TALKS

Geometric structure in dependence models and applications, *CMStatistics 2019*, Senate House, University of London, UK, December 15, 2019.

Geometric structure in dependence models and applications, *Applied Math Seminar*, Department of Mathematical Sciences, UMass Lowell, November 21, 2019.

Geometric structure in dependence models and applications, *American Mathematical Society Fall Center Sectional Meeting*, University of Wisconsin Madison, Madison, WI, September 14, 2019

Geometric structure in dependence models and applications, *10th International Workshop on Simulation and Statistics*, University of Salzburg, Salzburg, Austria, September 2, 2019

Recent advances and new challenges in optimal designs for copula models, *International Conference on Design of Experiments (ICODOE 2019)*, Memphis (TN), USA, May 19, 2019.

Geometric structure in dependence models and applications, *Seminar at Columbia University*, New York, USA, February 13, 2019

Discrete copulas and stochastic monotonicity, *CMStatistics 2018*, Pisa, Italy, December 16, 2018.

Geometry of discrete copulas, *COMPSTAT 2018*, Iasi, Romania, August 31, 2018.

Geometry of discrete copulas, *Seminar at the University of Salento*, Lecce, Italy, May 22, 2018.

Geometry of discrete copulas, *Scint of Copulas – Carlo 70*, Lecce, Italy, May 18, 2018.

The geometry of discrete copulas, *American Mathematical Society Spring Eastern Sectional Meeting*, Northeastern University, Boston, USA, April 21, 2018

Discrete copulas for weather forecasting: theoretical and practical aspects, *CMStatistics 2017*, Senate House, University of London, UK, December 17, 2017.

The geometry of discrete copulas, *Seminar on Applied Algebra and Geometry at MIT*, USA, October 31, 2017.

Discrete copulas for weather forecasting: theoretical and practical aspects, *IFAS Research Seminar*, JKU Linz, Austria, October 12, 2018.

Optimal discrimination designs for copula models, *CMStatistics 2015*, Senate House, University of London, UK, December 12, 2015.

A study on robustness in the optimal design of experiments for copula models, *12th Workshop on Stochastic Models, Statistics and Their Applications*, Wroclaw, Poland, February 18, 2015

An approach on design of experiments by using copulas, *CMStatistics 2014*, University of Pisa, Italy, December 8, 2014.

Stochastic dependence evidences in experimental design for copula models, *19th Young Statisticians Meeting*, Basovizza, Italy, October 18, 2014.

OTHER SELECTED TALKS AND POSTERS The geometry of discrete copulas, *Workshop on dependence modeling tools for risk management*, Centre de Recherches Mathématiques, Montreal, Canada, October 2, 2017. (poster)

Geometry of discrete copulas for weather forecasting, *Conference on Conditional Independence Structures and Extremes* TU Munich, Germany, October 10, 2016. (poster)

Geometry of discrete copulas for weather forecasting, *Salzburg Workshop on Dependence Models & Copulas*, University of Salzburg, Austria, September 22, 2016. (poster)

The polytope of ultramodular discrete copulas, *36th Linz Seminar on Fuzzy Set Theory*, Linz, Austria, February 3, 2014.

D_s -optimality for discriminating between copula models: a first example, *30th International Workshop on Statistical Modeling*, JKU Linz, Austria, July 9, 2015. (poster)

Generalized Fréchet bounds: from contingency tables to discrete copulas, *Workshop on Algebraic Statistics 2015*, University of Genoa, Italy, June 10, 2015. (poster)

A study of the copula parameter impact on optimal design of experiments for copula models, *ENBIS 2014*, JKU Linz, Austria, September 24, 2014

Optimal designs for copula models, *COMPSTAT 2014*, University of Geneva, Switzerland, August 19, 2014.

Design of experiments for copula models, *Model-Oriented Data Analysis and Optimum Design: MODA 10*, Lagow Lubuski, Poland, June 13, 2013. (poster)

HONORS AND AWARDS Austrian Science Fund (FWF) Erwin Schrödinger Postdoctoral Fellowship
JKU Linz: graduated with distinction
University of Salento: graduated Magna Cum Laude

OTHER ACTIVITIES *Organization of seminars, conference sessions*

- CMStatistics 2020, member of the scientific program committee
- CMStatistics 2020, organized invited session
- COMPSTAT 2020, organized invited session “Dependence modeling and copulas” (postponed)
- *Applied Math Seminar* at UMass Lowell, Spring 2020
- CMStatistics 2019, organized invited session “Algebraic Statistics”, organized with Kaie Kubjas
- *Seminar on Algebra, Statistics, and Optimization*, bi-weekly seminar held at MIT in Spring 2019, co-organized with Elina Robeva, Daniel Bernstein, and Diego Cifuentes
- *Applied Algebra Day*, held at MIT on November 17, 2018: a full-day workshop that featured eleven speakers, co-organized with Elina Robeva and Caroline Uhler

- CMStatistics 2018, organized invited session “Dependence models and copulas”, co-organized with Sebastian Fuchs
- COMPSTAT 2018, organized invited session “Recent development on copula-based models”, co-organized with Fabrizio Durante and Roberta Pappadà

Reviewer for several statistic journals

Scandinavian Journal of Statistics; Computational Statistics & Data Analysis; Journal of the Royal Statistical Society (Series A); Statistical Papers; Spatial Statistics; Dependence Modeling; Statistical Methods & Applications; Math Reviews; International Journal of Approximate Reasoning; Canadian Journal of Physics; International Journal of Applied Mathematics and Computer Science; Austrian Journal of Statistics.

SKILLS

Software: R (expert user), Mathematica (expert user), Polymake (intermediate user), Python (basic user), MATLAB (basic user); Experience with slurm.

Language: Italian (native), English (fluent), German (Intermediate), French (basic).