

## Education

**RWTH Aachen University** Aachen, Germany  
*PhD Candidate, Computational Network Science* Since Sept. 2012  
 Research focus: Systematic uncertainty in social networks, social dynamics and opinion models, representation of minorities in rankings

**Hertie School** Berlin, Germany  
*PhD Candidate, Doctoral Programme in Governance* Since Oct. 2019  
 Research focus: Computational methods for data-driven decision making in public policy; Network Science and Natural Language Processing

**University of Oxford** Oxford, United Kingdom  
*M.Sc. in Mathematical Modelling and Scientific Computing (Distinction)* Oct. 2018 - Oct. 2019  
 Master Thesis: "Non-Linear Interactions and Temporal Dynamics on Higher-Order Networks"

**University of Bonn** Bonn, Germany  
*B.Sc. in Mathematics (Distinction)* Oct. 2014 - Oct. 2018  
 Bachelor Thesis: "Machine Learning of Variational Problems in Image Reconstruction"  
*In parallel B.Sc. in Psychology*

**Benemérita Universidad Autónoma de Puebla** Puebla, Mexico  
*Academic exchange* Aug. 2016 - Mar. 2017

## Research Experience

**Hertie School Data Science Lab** Berlin, Germany  
*Research Associate* Mar. 2020 - Aug. 2020  

- o **Lancet Countdown:** Developing computational methods to automatically detect and measure interdependence of climate change and health topics in political speeches for the Lancet Countdown on Health and Climate Change.

**oxford.berlin** Berlin, Germany  
*Researcher* Since Dec. 2019  

- o Collaboration with researchers from the Oxford Internet Institute, Hertie School, ETH Zürich and TU Berlin for computational social science research projects such as the **CoRisk-Index**, an economic indicator of industry-specific risk assessments related to Covid-19.

**KAUST Computational Sciences Group** Thuwal, Saudi-Arabia  
*Research Intern* Dec. 2017 - Feb. 2018  

- o **Adaptive Krylov:** Worked on the development of a computer environment for real-time fibre simulation in the context of a collaborative research project on adaptive Krylov subspace solvers.
- o **Social Robotics:** Co-developed the scientific content for the Social Robotics workshop within the ACM PETRA 2018 conference (Pervasive Technologies Related to Assistive Environments).
- o **Object Reconstruction:** Provided mathematical background for a collaborative research on the reconstruction of objects behind walls using their reflection of radio waves.
- o **Academic outreach:** Initiated academic outreach activities with Effat University, the first private university for women in Saudi-Arabia, in order to organise a Hackathon to promote talented students with an internship opportunity at KAUST.

**University of Bonn** Bonn, Germany  
*Research Assistant* Apr. 2017 - Sept. 2017  

- o **Institute for Numerical Simulation:** Worked on a variational network machine learning approach to classify tumor immune cell interactions on microscope images of melanoma tissue sections.

## Professional Experience

**Consulate General of Germany** Jeddah, Saudi-Arabia  
*Professional Intern* Oct. 2017 to Dec. 2017  

- o Worked in the economic, political, and cultural department (main research project: detailed report on the impact of current social developments on the society in Saudi-Arabia and on the situation of women).
- o Organised events of the Consulate General (German National Day, concert tour of Arcis Saxophon Orchestra), attended conferences and receptions, and worked with artists of the local art scene.

**Willis Towers Watson**

*Professional Intern*

*Cologne, Germany*

*Mar.- Apr. 2016, 2017*

- o Worked on life insurance and digitisation projects within the department "Risk, Consulting and Software".
- o Helped with the development of an analysis tools for provision for damages.

## Skills

**Programming and word processing:** C/C++ • MATLAB • Python • R • MS Office • L<sup>A</sup>T<sub>E</sub>X

**Languages:** German (native) • English (fluent) • Spanish (conversational) • French (intermediate)

## Honors

**Hertie School, PhD Programme:** Full Scholarship and living stipend awarded for PhD studies.

**Wadham MSc Exam Prize:** Prize for achieving a Distinction in my postgraduate studies in Mathematics in Oxford.

**Graduate Student Contribution Award:** Award for contributing to the department by initiating the Maths in Society Speakers Series in the Mathematical Institute of the University of Oxford in 2019.

**Keeley Senior Scholarship:** Awarded one of the eleven Senior Scholarships of Wadham College from Michaelmas 2018.

**German Mathematics Society (DMV):** Fellowship of the main professional society of German Mathematicians in honour of outstanding performance in graduation examinations (Abiturpreis).

**German Academic Scholarship Foundation (Studienstiftung):** Germany's largest, oldest, and most prestigious scholarship foundation is the only non-political, non-denominational, and ideologically independent foundation in Germany and supports top 0.5% of students. Fellowship for full undergraduate and graduate studies.

## Publications

- 2020:** o **L. Neuhäuser**, A. Mellor, and R. Lambiotte. Multibody interactions and nonlinear consensus dynamics on networked systems. In *Physical Review E* 101 (2020)
- 2019:** o A. Effland, E. Kobler, A. Brandenburg, T. Klatzer, **L. Neuhäuser**, M. Hölzel, J. Landsberg, T. Pock, and M. Rumpf. Joint reconstruction and classification of tumor cells and cell interactions in melanoma tissue sections with synthesized training data. In *Int. J. Comput. Assist. Radiol. Surg.* (2019).
- 2018:** o A. Effland, M. Hölzel, T. Klatzer, E. Kobler, J. Landsberg, **L. Neuhäuser**, T. Pock, and M. Rumpf. Variational networks for joint image reconstruction and classification of tumor immune cell interactions in melanoma tissue sections. In *Bildverarbeitung für die Medizin* (2018).

## Preprints/ Under Review

- 2020:** o **L. Neuhäuser**, M. T. Schaub, A. Mellor, R. Lambiotte. Opinion Dynamics with Multi-Body Interactions. arXiv preprint *arXiv:2004.00901* (accepted to NETGCOOP 2021)
- o R. Sahasrabudde, **L. Neuhäuser**, and R. Lambiotte. Modelling Non-Linear Consensus Dynamics on Hypergraphs. arXiv preprint *arXiv:2007.09391* (2020) (under review)
- o F. I. Stamm\*, **L. Neuhäuser\***, F. Lemmerich, M. T. Schaub, M. Strohmaier. Systematic edge uncertainty in attributed social networks and its effects on rankings of minority nodes. arXiv preprint *arXiv:2010.11546* (2020) (submitted)
- (\* equal contribution)
- o F. Stephany, N. Stoehr, P. Darius, **L. Neuhäuser**, O. Teutloff, F. Braesemann. The CoRisk-Index: A data-mining approach to identify industry-specific risk assessments related to COVID-19 in real-time. arXiv preprint *arXiv:2003.12432* (2020) (submitted)

## Invited talks

### Oxford Networks Seminar

*Mathematical Institute, University of Oxford*

Title: No higher-order effects without nonlinearity

*Online*

*24th Nov. 2020*

### Women in Network Science (WiNS) Seminar

*University of Washington*

Title: Consensus dynamics on hypergraphs: No higher-order effects without nonlinearity!

*Online*

*11th Nov. 2020*

### Maths in Society Speakers Series

*Mathematical Institute, University of Oxford*

Title: Sustainable Networks.

*Oxford, United Kingdom*

*27th Feb. 2020*

**CHANGES+ colloquium**  
*Berlin Mathematics Research Center Math+*  
Title: Higher-order networks and modelling peer-pressure.

*Berlin, Germany*  
*23rd Jan. 2020*

**Conferences**

**NETSCI 2020**  
*Full talk*  
Title: Multi-body Interactions and Non-Linear Consensus  
Dynamics on Networked Systems.

*Online*  
*22nd Sep. 2020*

**Extracurricular  
Activities**

**Maths in Society Speakers Series**  
*Initiator*  
o Initiated a speakers series hosting speakers across different disciplines ranging from economics to social and political sciences to in order to expose mathematicians to the broader impact of their work on society. Received an award for contribution to the department for this ongoing project.

*Oxford, United Kingdom*  
*Jun. 2015 - Jun. 2016*

**GlobalMatch e.V.**  
*Business Development*

- o Non-profit association that tackles the issue of postcolonialism in international development cooperation by connecting people from the Global North and South on a digital platform for a joint project work at eye-level.
- o Developing the digital platform and organizing an exchange with tandem partners from Germany and Uganda in cooperation with "Engagement Global", the German central contact agency for development policy commitment.

*Bonn, Germany*  
*Apr. 2017 - present*

**German Academic Scholarship Foundation**  
*Spokesperson*  
o Organized the local events and engagement of fellows in Bonn.

*Bonn, Germany*  
*Jun. 2015 - Jun. 2016*

**DAAD student support programme**  
*Mentor*

- o Supported a Syrian Computer Science student in her first year in Germany by weekly meetings and organizational advice as part of "An(ge)kommen", a support programme for Syrian students that was initiated by the German Academic Scholarship Foundation (Studienstiftung) in cooperation with the German Academic Exchange Service (DAAD).

*Bonn, Germany*  
*Jan. 2016 - Jan. 2017*

**Voluntary Year of Social Service**  
*Volunteer*

- o **"Ha Phororo" Youth Retreat, Hartbeesportdam:** Led workshops and retreat activities for school classes.
- o **"Meetse a Bophelo"(AIDS Hope) Center:** Worked in the township Mamelodi by teaching in the afterschool care for HIV infected children, giving educational workshops about AIDS prevention for the local community, working with drug addicts in cooperation with a local rehab center, and organizing hospice care groups.
- o **German Catholic Congregation:** Supported the congregation "St. Joseph der Arbeiter" in Pretoria by organizational help of events and counselling.

*Pretoria, South Africa*  
*Aug. 2013 - Jun. 2014*