TRIVIK VERMA

TU DELFT
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EDUCATION

Feb 2013 - Jan 2016
Switzerland

PhD in **Computational Statistics** : Mobility Networks
at ETH Zurich
My dissertation shows how social and infrastructural networks fundamentally function. Using data science and statistical analysis, computer simulations show the emergence of physical laws that direct the evolution of such networks.

Sep 2010 - Aug 2012
Netherlands

MSc, Computer Engineering : **Networks and Distributed Systems**
at Delft University of Technology
A new method that takes into account the functionality of socio-technical infrastructures give more accurate results.

Aug 2006 - Jun 2010
India

Bachelors, **Computer Science and Engineering**
at Manipal University
Program in software development, networks, data structures, computer hardware, information theory, mathematics and design.

WORK EXPERIENCE

Apr 2019 - Present
Netherlands

Assistant Professor in Computational Urban Science
at Dept. of Multi-Actor Systems, TPM, TU Delft
To develop methods that result in understanding urbanization processes and evaluating the effectiveness and implications of multi-actor policies for the development of growing urban spaces and equitable use of resources in cities.

Dec 2017 - Mar 2019
Switzerland

Senior Postdoctoral Fellow
at Dept. of Environmental Systems Science, ETH Zurich
Modelling and Simulation of physical laws in **Urban Infrastructure Systems**.

April 2015 - Present
Luxembourg

Board Member (non-executive)
at The Outdoor Journal & Voyage

Mar 2016 - Present
Portugal

Collaborator, Center for **Theoretical and Computational Physics**
at FCUL, University of Lisbon
Mentoring Master Projects in Computaional Statistics and Network Science

April 2015 - Nov 2017
Luxembourg

Chief Data Scientist, Co-Founder (€ 1 million Seed)
at The Outdoor Journal & Voyage
Lead global scientific operations including grant applications, design, research and hiring.

April 2015 - Nov 2017
India

Head of Publishing
at The Outdoor Journal & Voyage
Directed and produced print and web media content.

Apr 2011 - Dec 2012
Netherlands

Research Scientist
at TNO, Performance of Networks and Systems
Sole engineer in a five-member team which established an **Agent-Based** Smart-Grid Energy model for the Dutch Government as a prototype.

Jan 2010 - May 2010
India

Network Security Engineer
at Cisco Systems
Engineered dummy setups for troubleshooting client operations and setting up client side network mirrors for safety backups.

Jun 2009 - Jul 2009
India

Web Design Architect
at HSBC
Designed Learning Management Systems; Syntax, Language and Semantic design. Exposure to web technologies and a global banking structure.

SKILLS

Engineering Sciences

Algorithmic Design
Stochastic Modelling
Statistical Analyses
Network Analyses
Machine Learning
Bayesian Modelling
Data Mining
Game Theory
Graphics & Visualization

Programming Languages

C++, Java
R, Python, Matlab
Latex, Markup
Bash
CSS, PHP, HTML
JavaScript
PostgreSQL

MEDIA COVERAGE

» MIT Technology Review
» ETH News
» University of Illinois at Chicago
» Lëtzebuerger Journal

GRANTS & AWARDS

» **TU Delft Top Talent Fellowship 2010-2012** (€ 16,000)
» ETH48 **PhD Scholarship** from **Swiss Re** (CHF 200,000)
» LuxInnovation 2017 research grant (€ 100k - partially funded)
» Booking.com Booster Lab (€ 20,000)
» Branco Weiss Fellowship 2018 (Rejected)
» National Geographic Fellowship 2018 onwards

TEACHING

Introduction to Data Science
Multi-Actor Systems, TPM, TU Delft, 2019-ongoing

Spatial Analysis, Modelling and Optimization
Environmental Science at ETH Zurich, 2018

National Geographic University Workshops
Churchill Northern Studies Centre, Canada 2018

REVIEWING FOR JOURNALS

» PloS One
» Nature Applied Sciences
» Physical Review Letters (PRL)
» Physica A
» EPJ Data Science

PUBLICATIONS

Ongoing WORK

- » Nicoletti, L., Sirenko, M., Verma, T. (In Progress) A socio-economically driven framework for navigating urban policy: case in Canadian cities.
- » Verma, T., Folini, M., Araújo, N. A. M. (In Progress) Decentralised Navigation in cities.
- » Verma, T., van Meurs, B., Kwakkel, J., Warnier, M. (In Progress) Flood risk screening using a simple network approach.
- » Verma, T., Sirenko, M., Kornecki, I., Cunningham, S., Araújo, N. A. M. (In Progress) Revealing complex urban demand from entry-only ridership data.
- » Ebrahimi Fard., A, Verma, T., van de Walle, B. (In progress) Tampering the misinformation campaigns: From Educational Strategies to Artificial Intelligence.

Representative PUBLICATIONS

Verma, T., Russmann, F., Araújo, N. A. M., Nagler, J., & Herrmann, H. J. (2016). Emergence of core–peripheries in networks. *Nature Communications*, 7, 10441.

Verma, T., Araújo, N. A., & Herrmann, H. J. (2014). Revealing the structure of the world airline network. *Scientific Reports*, 4, 5638.

Verma, T., Rebelo, L., Araújo, N. A. (2019). Impact of perceived distances on international tourism. *PloS One*, 14(12): e0225315.

Koc, Y., **Verma, T.**, Araujo, N. A., & Warnier, M. (2013, November). Matcasc: A tool to analyse cascading line outages in power grids. In *Intelligent Energy Systems (IWIES)*, 2013 IEEE International Workshop on Intelligent Energy Systems (pp. 143-148). IEEE.

Verma, T., Ellens, W., & Kooij, R. E. (2015). Context-independent centrality measures underestimate the vulnerability of power grids. *International Journal of Critical Infrastructures* 7, 11(1), 62-81.

Verma, T., Araújo, N. A. M., Nagler, J., Andrade Jr, J. S., & Herrmann, H. J. (2016). Model for the growth of the world airline network. *International Journal of Modern Physics C*, 27(12), 1650141.

Louzada, V. H., Araújo, N. A., **Verma, T.**, Daolio, F., Herrmann, H. J., & Tomassini, M. (2015). Critical cooperation range to improve spatial network robustness. *PloS One*, 10(3), e0118635.

Rosas-Casals, M., Bologna, S., Bompard, E. F., D'Agostino, G., Ellens, W., Pagani, G. A., ... & **Verma, T.** (2015). Knowing power grids and understanding complexity science. *International Journal of Critical Infrastructures*, 11(1), 4-14.

INVITED TALKS

- » **Spatiotemporal Geography of Cities** Conference
  Complex Networks at University of Lisbon in Dec 2019
- » **Urbanisation and Policy in Cities** Spark Meeting
  CiTG at TU Delft in Nov 2019 (together with Ding Luo - PhD student with Dr. Oded Cats)
- » **Urban Sprawl and Public Transport Utilisation** Seminar
  Alan Turing Institute in London in Aug 2019
- » **Why the world came to a halt in 2010?** Conference
  Desire, University of Twente, Enschede, Netherlands in June 2019
- » **Forecasting Air-Traffic Network Demand and Supply** Seminar
  Swiss Re Institute at Swiss Re HQ, Zurich in Feb 2016
- » **Transport Networks: Growth and Optimization** Seminar
  ETH Risk Center at ETH Zurich in July 2015
- » **Structure of Transport Networks** Lightening Talk
  NetSci at Berkeley in June 2014
- » **Emergence of Risk: Cascading Failure and Damage Control** Partner Council Meeting
  ETH Risk Center at ETH Zurich in May 2013
- » **Vulnerability of Power Grids to Cascading Failures** Seminar
  Performance of Networks and Systems at TNO, Delft, Netherlands in July 2012

ACADEMIC MENTORING

- » Bram van Meurs, Master Thesis, TU Delft, Dec 2019
- » Franziska Krummenacher, Master Thesis, ETH Zurich, Feb 2019
- » Itto Kornecki, Master Thesis, ETH Zurich, Feb 2019
- » Luís Rebelo, Master Thesis, FCUL Portugal, Sep 2018
- » Fabian Russmann, Master Thesis, ETH Zurich, March 2015

STRENGTHS

Entrepreneurship

Research & Development
Project Management
Grant Pitching
Presentation
Technical Leadership
Networking
Operations Management
Resilience

Media and Technology

Editing
Publishing
CMS Operations
Photography
Adobe Suite
Office Suite
Video Production
Graphic Design

COLLABORATIONS

Computational Social Science
- » Ryan Murphy, ETH, University of Zurich & Morningstar, Inc.
- » Jan Nagler, ETH Zurich & Frankfurt School of Finance & Management
  Marco Tomassini, EPFL

Complex Networks
- » Robert Kooij, TU Delft, Master Advisor
- » Nuno Araújo, FCUL Lisbon, PhD Supervisor
- » Raissa D'Souza, UC Davis

Systems Engineering
- » Martijn Warnier, TU Delft, Master Coadvisor
- » Oded Cats, TU Delft
- » Sybil Derrible, University of Illinois at Chicago

Agent Based Modelling
- » Dirk Helbing, ETH Zurich, PhD Coadvisor
- » Frank Schweitzer, ETH Zurich

Computational Statistics
- » Hans Herrmann, ETH Zurich
- » José S. Andrade Jr., Universidade Federal do Ceará

CERTIFICATIONS

- » National Geographic Teaching Instructor
- » Cisco Certified Network Associate (CCNA)
- » International Student Coach, TU Delft
- » Wilderness First Aid and CPR - Aerie Backcountry Medicine, USA

INTERESTS

- » Adventure Sports
- » Journalism and Writing
- » Photography
- » Environmental Conservation

LANGUAGES

English (F), Hindi (N), Russian (I), German (B)