Carolina Mattsson

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EDUCATION

Northeastern University
Ph.D. Network Science   Expected May, 2020

Lehigh University
B.S. Physics   May, 2014
B.A. International Relations
Eckardt Scholar Program

RESEARCH POSITIONS

NSF Graduate Research Fellow   2014-2020
Network Science Institute, Northeastern University   Boston, MA
Develop network science for financial transaction data as applied to real-world payment systems. Advance projects in the Lazer Lab on methods in computational social science integrating digital trace, administrative, and survey data.

National Undergraduate Fellow   2013
General Atomics   San Diego, CA
Participated in an intensive short course on plasma physics; studied the material properties of boron-carbide, an ultra-hard ceramic.

JOURNAL ARTICLES

Networks of monetary flow at native resolution
Carolina Mattsson   *Submitted*

Context-specific hybrid data collection for social ties in action
Carolina Mattsson, Drew Margolin, Stefan Wojcik, David Lazer   *Submitted*

REPORTS & THESES

Follow the money: Making sense of payment systems
Carolina Mattsson. Advisor: David Lazer. *Network Science Institute, Northeastern University.*   2020

Understanding Key Mobile Money Users
Carolina Mattsson, Guy Stuart. *International Finance Corporation.*   2018

Combating fake news: An agenda for research and action
David Lazer, Matthew Baum, Nir Grinberg, Lisa Friedland, Kenneth Joseph, Will Hobbs, Carolina Mattsson. *Harvard Kennedy School, Shorenstein Center on Media, Politics and Public Policy.*   2017

Abrupt Changes in Nuclear Power Development
Carolina Mattsson. Advisor: Arman Grigoryan. *Department of International Relations, Lehigh University.*   2014

PATENTS

Method and Apparatus for Tracking Data in an Entry-Exit Network
U.S. Provisional Patent Application No.: 62/809,359   2019

GRANTS & FELLOWSHIPS

INTERN Supplemental Funding Opportunity
with Sara Wadia-Fascetti, PhD Network Vice Provost, Northeastern University
National Science Foundation   2019

Understanding Advanced Users of Mobile Money
with Guy Stuart, Executive Director, Microfinance Opportunities
Bill & Melinda Gates Foundation   2016

Graduate Research Fellowship Program
with Sara Wadia-Fascetti, PhD Network Vice Provost, Northeastern University
National Science Foundation   2015

NULab for Text, Maps, and Networks Fellowship
with Julia Flanders, Professor of the Practice, Northeastern University
NULab for Text, Maps, and Networks, Northeastern University   2014

National Undergraduate Fellowship Program
with Greg C. Randall, Research Scientist, General Atomics
U.S. Department of Energy   2013

COMMENTS	**Why is inequality bad?**	
	Social Science Space Blog, SAGE Publishing	*Submitted*

Theory and tools in the age of big data
SAGE Ocean Blog, SAGE Publishing   *Submitted*

Expert Commentary: The Digital Currency Problem
Undergraduate Mathematics and Its Applications Vol 40.2-3   2019

HONORS &	• Oles M. Smolansky Award for Academic Excellence in IR	2014
AWARDS	• Donald T. Campbell Social Science Research Prize	2014
	• Lemmon Prize	2014
	• Rhodes Scholarship and Marshall Scholarship Finalist	2014
	• Malcolm J. Gordon, Jr. Physics Prize	2011
	• Lehigh University Academic Merit Award	2010
	• National Merit Scholar	2009

PRESENTATIONS

Monitoring Mobile Money Use
poster with Shafique Jamal, Soren Heitmann, Guy Stuart
NetMob Conference, Mathematical Institute, University of Oxford   07/2019

Follow the money: making sense of payment systems
International Conference on Network Science, Burlington, VT   05/2019

Follow the money: making sense of digital payment systems
Center for International Development, Harvard Kennedy School   03/2019

Follow the money: making sense of payment systems
North America Convening of INET YSI, Los Angeles   02/2019

Quantifying economic activity on financial transaction networks
poster at International Conference on Complex Systems, Cambridge, MA 07/2018

Follow the money: making sense of financial transaction networks

Workshop on Statistical Physics for Financial and Economic Networks, NetSci
Paris   06/2018

**Follow the money: Defining node sequences on weighted and directed
temporal networks**
International Conference on Complex Networks 2018, Boston   03/2018

**Disambiguating the Federal Election Commission Campaign Contri-
bution Database**
with Navid Dianati, Derek Ruths, David Lazer
Politics & Computational Social Science, Northeastern University   08/2018

**What does mobile metadata measure? Insights from a pilot study
during a sudden emergency**
with Drew Margolin, Stefan Wojcik, David Lazer
NetMob Conference 2017, Vodafone Village, Milan, Italy   04/2017

Interpersonal network dynamics in an emerging crisis
with Drew Margolin, David Lazer
XXXVI Sunbelt Conference 2016, Newport Beach, CA   04/2016

On social ties and stability: an agent-based model of informal economies
poster with Eloy Fisher, Sharon Greenblum, Jakub Rojcek
Workshop on Information in Networks Conference, New York, NY   10/2015

Boron Carbide Materials for Inertial Confinement Fusion
poster with G.C. Randall, H. Xu, H. Streckert, C. Hill, A. Nikroo (General
Atomics)
APS Division of Plasma Physics Conference, Denver, CO   11/2013

WORKSHOPS **Social Science Foo Camp**
Facebook Headquarters, Menlo Park, CA   2019

Summer School in Economic Networks
Mathematical Institute, University of Oxford   2018

Complex Systems Summer School
Santa Fe Institute, Santa Fe, NM   2015

TEACHING **DS2001: Programming with Data Social Science Practicum**
Khoury College of Computer Sciences
Northeastern University   2019

MENTORING **COMAP Interdisciplinary Contest in Modeling**
Final Grader, ICM Problem F (policy)   2019

MIT Research Sciences Institute Summer Program
Project mentor   2018

LEADERSHIP **International Conference on Network Science**
& SERVICE Program Committee Member, NetSci-X Tokyo   2020
School, Satellite, and Poster Committee Member, NetSci Burlington 2019

Workshop on Economic and Financial Networks
Organizer, NetSci-X Tokyo   2020
Organizer, NetSci Burlington   2019

International Conference on Computational Social Science
Program Committee Member, IC2S2 Amsterdam   2019

INET Young Scholar Initiative
Organizer, Complexity Economics Working Group   2019

International Conference on Complex Networks
Invited Speaker Liaison, CompleNet Boston   2018

Society for Young Network Scientists
Founding Member   2018

Network Science Institute Graduate Student Association
Founding President   2016-17

Northeastern College of Science Graduate Student Council
Representative, Network Science Program   2015-17

Lehigh University Council of Student Presidents
Representative, Global Union   2015-17

Lehigh University Global Union
President   2014

PROFESSIONAL AFFILIATIONS
- Network Science Society
- Society for Young Network Scientists
- American Economic Association
- INET Young Scholar Initiative

GRADUATE COURSES
- Complex Networks
- Dynamic Processes on Networks
- Data Mining Techniques
- Bayesian & Network Statistics
- Algorithms
- Social Networks
- Social Capital & Resilience
- International Economic Development
- Economics of Money and Banking (Coursera)

TECHNICAL SKILLS
Programming & Statistics: Python, R, Gephi, QGIS, SPSS, Stata, Fortran
Research Computing: Unix, Git, SLURM, AWS Command Line Interface
Languages: Native fluency in English & Swedish. Fluent in Spanish.

CONSULTING EXPERIENCE
Business for Social Responsibility Project
with Microfinance Opportunities, Cambridge, MA.   2019
Analyst. The objective of this work was to quantify and understand the impact of wage digitization (HerProject) on the lives of garment workers in Bangladesh, and their use of financial services. Responsible for technical analysis of financial transaction data, quantifying the behavior of individual mobile money users from empirical cash flow patterns. The resulting behavioral measures are integrated with rich survey data to better understand the use of financial services among the poor.

Digital Money Network Analysis
with Microfinance Opportunities, Cambridge, MA.
International Finance Corporation   2017
Researcher. The objective of this project was to quantify the maturity of mobile money services from providers' own transaction records. Responsible for technical analysis of financial transaction data, developing and implementing measures, and drafting reports. The measures developed under the course of this project are suitable for comparison across providers and countries, which will contribute to identifying and sharing best practices for mobile money providers. This project also uncovered systematic fraud (commission manipulation) by a subset of mobile money agents.

Understanding Key Mobile Money Users
with Microfinance Opportunities, Cambridge, MA.
Bill & Melinda Gates Foundation   2016
Researcher. The objective of this project was to identify and profile key users of mobile money services in Uganda, Kenya, and Tanzania. Responsible for data cleaning, data analysis, interpretation of results, and drafting reports. Integrated three waves of Financial Inclusion Insights surveys of mobile money use; conducted big data analysis of mobile money transactions.

Mobile Money Study
with Cignifi Inc., Cambridge, MA.
International Finance Corporation   2015
Analyst. The objective of this work was to identify and target potential mobile money users using Call Detail Records. Responsible for providing subject-area expertise and conducting network analysis on mobile money transaction data.