

<b>School/Department:</b>	Rotterdam School of Management Department of Technology & Operations Management
<b>Project Title:</b>	Exploring urban dynamics through social media data
<b>Abstract:</b>	<p>Georeferenced social media data represents the intersection of the physical and virtual world, linking people's thoughts, opinions and concerns to a physical place and time. This project builds upon a complete dataset of all Twitter messages sent between September 2011 and June 2020 from within the Greater London area. Auxiliary data on e.g. demographics, transportation and crime are openly available through the London Data Store and other sources. The Ph.D. student will explore how this data reflects the evolution of both the physical system (the city of London) and the virtual system (Twitter as a social media network) over time. Exemplary research questions include:</p> <ul style="list-style-type: none"> <li>• To which degree are gentrification and urban decay reflected in social media patterns over time?</li> <li>• How does Twitter change as a social media network vs. a news medium over time?</li> <li>• How did the Covid-19 pandemic affect social media patterns in London?</li> <li>• Which differences can be observed between Twitter and other social media data with respect to location, time, and content?</li> </ul>
<b>PhD Trajectory</b>	<p>We are seeking highly motivated students with demonstrated academic ability, those who possess a commitment to interdisciplinary research on significant information technology and management issues, and those who desire to pursue an academic research career in this field. You will be part of the Business Information Management (BIM) section within the Department of Technology &amp; Operations Management at the Rotterdam School of Management, Erasmus University.</p> <p>Applicants must have strong quantitative training, with preference given to candidates who have earned an MSc, MPhil or Research Master in economics, computer science, econometrics, statistics, or a related field. Successful candidates have proficiency with R, SQL, Python, or other programming languages.</p> <p>As a Ph.D. student, you will gain the training and experience necessary to conduct independent research through course work in information systems, economics, econometrics, machine learning,</p>

	<p>and large-scale data analytics. You will work closely with the advisors to define, develop, and execute your own research. The Ph.D. dissertation will be defined by the student with inputs from the advisors, and thus requires creativity, self-direction, and a passion for scientific inquiry.</p> <p>During the Ph.D., you will work in close collaboration with the advisors to:</p> <ul style="list-style-type: none"> <li>• Identify a consequential phenomenon that is relevant to managers or policy makers, and which has not been fully addressed in prior research;</li> <li>• Obtain data, primary or secondary, that are needed to better understand the phenomenon;</li> <li>• Use the scientific literature to understand and examine the theoretical foundations of the phenomenon;</li> <li>• Identify the fundamental variables and relationships that are most important to the phenomenon of interest, and formalize these mathematically while relating them to data;</li> <li>• Identify the main assumptions that need to be made in order to solve or estimate the model, and understand their implications;</li> <li>• Develop methods necessary to extract research results from data;</li> <li>• Present research findings at national and international conferences;</li> <li>• Document findings for publication in leading scientific journals, and ultimately, your dissertation.</li> </ul> <p>To conduct research, you will be able to take advantage of our strong industry ties, institutional databases, and software development support to gain access to large-scale data sets and have the opportunity to collaborate with industry partners.</p>
<b>Literature references</b>	<p>K. Klemmer, T. Brandt &amp; S.A. Jarvis (2018). Isolating the Effect of Cycling on Local Business Environments in London. <i>PLoS One</i>, 13 (12), e0209090. doi: 10.1371/journal.pone.0209090</p> <p>Ting Li, J. van Dalen &amp; P.J. Rees (2018). More than just noise? Examining the Information Content of Stock Microblogs on Financial Markets. <i>Journal of Information Technology</i>, 33 (1), 50-69. doi: 10.1057/s41265-016-0034-2</p> <p>T. Brandt, J. Bendler &amp; D. Neumann (2017). Social Media Analytics and Value Creation in Urban Smart Tourism Ecosystems. <i>Information and Management</i>, 54 (6), 703-713. doi: 10.1016/j.im.2017.01.004</p> <p>M.S. Gerber (2014). Predicting crime using Twitter and kernel density estimation. <i>Decision Support Systems</i>, 61, 115-125. doi:</p>

	<p>10.1016/j.dss.2014.02.003</p> <p>C. Chew, G. Eysenbach (2010). Pandemics in the Age of Twitter: Content Analysis of Tweets during the 2009 H1N1 Outbreak. <i>PloS One</i>, 5(11), e14118. doi: 10.1371/journal.pone.0014118</p>
<b>Expected output</b>	<p>Scholarly publications. You will develop research papers that can be published in top-tier information systems and management journals, such as Management Science, MIS Quarterly, and Information Systems Research. BIM faculty at RSM has a strong publication record in these journals. The final results of the Ph.D. are also published in a Ph.D. dissertation. Most BIM Ph.D. students will be able to publish multiple papers in these top journals.</p> <p>Placement record. In the past five years, our graduates have accepted faculty positions at top business schools all around the world, including MIT, Northwestern University, George Washington University, Copenhagen Business School, IE Business School, University of Amsterdam, and VU Amsterdam.</p>
<b>Requirements of candidate:</b>	<ul style="list-style-type: none"> <li>• Passionate about understanding the impact of digital technologies on individuals, organizations, markets, system design, public policy, and society;</li> <li>• Enthusiasm for quantitative analysis, data, programming, and science;</li> <li>• Experience in conducting and completing a research project;</li> <li>• MSc or MPhil in Econometrics, Statistics, Computer Science, Economics or a related discipline;</li> <li>• Experience developing and estimating econometric or statistical models in R, SAS, Stata, and Python;</li> <li>• Programming skills, and in particular, prior exposure to or experience with scraping structured content structured web content (HTML, XPATH, CSS, etc.) from web sites;</li> <li>• Openness, intellectual curiosity, eagerness to learn, and a willingness to be proved wrong;</li> <li>• Ambition to work towards an academic career as a world-class researcher and instructor;</li> <li>• Willingness and motivation to formulate your own research projects and carry those through to the end (i.e., publication in a top journal);</li> <li>• Eagerness to ask and answer novel questions;</li> <li>• Experience in writing scientific papers.</li> <li>• EUR requirement: IELTS 7.5 (min 6.0 for all subs.); TOEFL: 100</li> </ul>

	(internet) or 600 (paper); GMAT or GRE: 85%
<b>Supervisor information:</b>	<p>The Ph.D. student will develop research topics in close collaboration with the advisors. They are: Dr. Tobias Brandt (co-promotor) and Prof. Dr. Ting Li (promotor).</p> <p><b>Dr. Tobias Brandt</b>  <a href="mailto:brandt@rsm.nl">brandt@rsm.nl</a>  <a href="https://www.rsm.nl/people/tobias-brandt/">https://www.rsm.nl/people/tobias-brandt/</a></p> <p>Tobias Brandt is an assistant professor and his research investigates the digital transformation of businesses and cities. He particularly focuses on smart power systems, innovative urban mobility solutions, and an improved understanding of the dynamics of urban tourism and crime. Tobias' work has received best paper awards and published in leading journals. His research on urban mobility and spatial analytics has been supported by two Microsoft Azure for Research Awards and an IBM Faculty Award.</p> <p><i>Recent publications:</i></p> <p>T. Brandt &amp; O. Dlugosch (2020). Exploratory data science for discovery and ex-ante assessment of operational policies: Insights from vehicle sharing. <i>Journal of Operations Management</i>, Accepted.</p> <p>T. Brandt, S. Wagner &amp; D. Neumann (2020). Prescriptive Analytics in Public-Sector Decision-Making: A Framework and Insights from Charging Infrastructure Planning. <i>European Journal of Operational Research</i>, Accepted.</p> <p>O. Dlugosch, T. Brandt &amp; D. Neumann (2020). Combining Analytics and Simulation Methods to Assess the Impact of Shared, Autonomous Electric Vehicles on Sustainable Urban Mobility. <i>Information and Management</i>. doi: 10.1016/j.im.2020.103285</p> <p>A. Abdelwahed, P.L. van den Berg, T. Brandt, J. Collins &amp; W. Ketter (2020). Evaluating and Optimizing Opportunity Fast-Charging Schedules in Transit Battery Electric Bus Networks. <i>Transportation Science</i>, Accepted.</p> <p>K. Klemmer, T. Brandt &amp; S.A. Jarvis (2018). Isolating the Effect of Cycling on Local Business Environments in London. <i>PLoS One</i>, 13 (12), e0209090. doi: 10.1371/journal.pone.0209090</p> <p>T. Brandt, S. Feuerriegel &amp; D. Neumann (2018). Modeling Interferences in Information Systems Design for Cyberphysical Systems: Insights from a Smart Grid Application. <i>European Journal of Information Systems</i>, 27 (2), 207-220. doi: 10.1057/s41303-016-0030-1</p>

	<p>T. Brandt (2018). Interview with David Prendergast on “Mediating Between Technology and People in Smart City Transformations”. <i>Business &amp; Information Systems Engineering</i>, 60 (3), 265-267. doi: 10.1007/s12599-018-0531-7</p> <p>T. Brandt, W. Ketter, L.M. Kolbe, D. Neumann &amp; R.T. Watson (2018). Smart Cities and Digitized Urban Management. <i>Business &amp; Information Systems Engineering</i>, 60 (3), 193-195. doi: 10.1007/s12599-018-0537-1</p> <p>C. Willing, T. Brandt &amp; D. Neumann (2017). Intermodal Mobility. <i>Business &amp; Information Systems Engineering</i>, 59 (3), 173-179. doi: 10.1007/s12599-017-0471-7</p> <p>C. Willing, T. Brandt &amp; D. Neumann (2017). Electronic Mobility Market Platforms - A Review of the Current State and Applications of Business Analytics. <i>Electronic Markets</i>, 27 (3), 267-282. doi: 10.1007/s12525-017-0257-2</p> <p>C. Willing, K. Klemmer, T. Brandt &amp; D. Neumann (2017). Moving in Time and Space - Location Intelligence for Carsharing Decision Support. <i>Decision Support Systems</i>, 99, 75-85. doi: 10.1016/j.dss.2017.05.005</p> <p>G. Gust, C.M. Flath, T. Brandt, P. Ströhle &amp; D. Neumann (2017). How a Traditional Company Seeded New Analytics Capabilities. <i>MIS Quarterly Executive</i>, 16 (3), 215-230.</p> <p>T. Brandt, J. Bendler &amp; D. Neumann (2017). Social Media Analytics and Value Creation in Urban Smart Tourism Ecosystems. <i>Information and Management</i>, 54 (6), 703-713. doi: 10.1016/j.im.2017.01.004</p> <p>T. Brandt, S. Wagner &amp; D. Neumann (2017). Evaluating a Business Model for Vehicle-Grid Integration: Evidence from Germany. <i>Transportation Research. Part D, Transport and Environment</i>, 50, 488-504. doi: 10.1016/j.trd.2016.11.017</p> <p>S. Wagner, T. Brandt &amp; D. Neumann (2016). In Free Float: Developing Business Analytics Support for Carsharing Providers. <i>Omega</i>, 59 (Part A), 4-14. doi: 10.1016/j.omega.2015.02.011</p> <p>F. Lang, A. Fink &amp; T. Brandt (2016). Design of automated negotiation mechanisms for decentralized heterogeneous machine scheduling. <i>European Journal of Operational Research</i>, 248 (1), 192-203. doi: 10.1016/j.ejor.2015.06.058</p> <p>T. Brandt &amp; D. Neumann (2015). Chasing Lemmings: Modelling IT-induced Misperceptions about the Strategic Situation as a Reason for Flash Crashes. <i>Journal of Management Information Systems</i>, 31 (4), 88-108. doi: 10.1080/07421222.2014.1001258</p>
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	<p><b>Prof. Ting Li</b></p> <p><a href="mailto:tli@rsm.nl">tli@rsm.nl</a></p> <p><a href="https://www.rsm.nl/people/ting-li/">https://www.rsm.nl/people/ting-li/</a></p> <p>Prof. Ting Li is the professor of digital business and focuses on studying the economic impacts of digitization on consumer behavior and firm strategy. She is an expert in digitization and platforms, personalization, ecommerce, social media analytics, mobile marketing, and pricing and revenue management.</p> <p><i>Recent publications:</i></p> <p>Ting Li, J. van Dalen &amp; P.J. Rees (2018). More than just noise? Examining the Information Content of Stock Microblogs on Financial Markets. <i>Journal of Information Technology</i>, 33 (1), 50-69. doi: 10.1057/s41265-016-0034-2</p> <p>S. Yang, T. Li &amp; E. van Heck (2015). Information Transparency in Prediction Markets. <i>Decision Support Systems</i>, 78, 67-79. doi: 10.1016/j.dss.2015.05.009</p>
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