

# Sarah Bratt

Syracuse University School of Information Studies  
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## EDUCATION

### Syracuse University School of Information Studies

Ph.D. Student in Information Science & Technology, Advisor: Dr. Jian Qin.

Syracuse, NY  
Expected May 2022

### Syracuse University School of Information Studies

M.S. Library & Information Science, CAS Data Science

Syracuse, NY  
May 2014

### Ithaca College

B.A. Philosophy, Minors in Italian and Political Science

Ithaca, NY  
May 2012

## RESEARCH OBJECTIVES

**Advance long-term research data sustainability by studying new ways of sharing, organizing, and collaborating made possible by information and communication technology.** I approach this question in several ways: qualitatively and quantitatively for theory building and sociotechnical systems design to accelerate knowledge production and diffusion. I am especially interested in their applications to inform science policy initiatives a) promoting diversity, equality, and inclusion in science and b) addressing policy-practice gaps in research data management and c) developing improved use and impact metrics for data products and services.

**Keywords:** Scholarly Communication; Digital Scholarship; Research Data Management; Cyberinfrastructure-enabled science

## REFEREED JOURNAL PUBLICATIONS

- Qin, J., **Bratt, S.**, and Hemsley, J. "The Structural Shift and Collaboration Capacity in GenBank Networks: A Longitudinal Study." *Quantitative Studies of Science (QSS)*. 2022 (under review)
- Qin, J., Hemsley, J., & **Bratt, S.E.** (2018). Collaboration capacity: measuring the impact of cyberinfrastructure-enabled collaboration networks. *International Journal of Technology Management*, 22, 636-655.
- Costa, Mark R., Qin, J. and **Bratt, S.E.** "Emergence of collaboration networks around large-scale data repositories: a study of the genomics community using GenBank." *Scientometrics* 108.1 (2016): 21-40.
- Bandara, D., Velipasalar, S., **Bratt, S.E.**, & Hirshfield, L. (2018). Building predictive models of emotion with functional near-infrared spectroscopy. *International Journal of Human-Computer Studies*, 110, 75-85.

## REFEREED CONFERENCE PROCEEDINGS

- **Bratt, Sarah E.**, Qin, J., & Hemsley, J. "Analyzing data collaborations as the 'missing link' in scientific collaboration indicators using metadata analytics." Association for Information Science and Technology (ASIST) 2021.
- Qin, J., Hemsley, J., & **Bratt, S. E.** "Evaluating the Impact of Collaboration Enablers through Metadata Analytics." Proceedings of the Association for Information Science and Technology (ASIST) 2021.
- Qin, J., Hemsley, J., & **Bratt, S.E.** (2021). The Role of Cyberinfrastructure-Enabled Collaboration Networks in Supporting Collaboration Capacity. Available at SSRN 3887529.

- Hemsley, J., Qin, J., & **Bratt, S. E.** (2020). "Data to knowledge in action: A longitudinal analysis of GenBank metadata." *Proceedings of the Association for Information Science and Technology*, 57(1), e253.
- Zeng, T., Wu, L., **Bratt, S.E.**, Acuna, Daniel. (2020) "Assigning credit to scientific datasets using article citation networks." *Journal of Informetrics*.
- Hincks, S. W., **Bratt, S.E.**, Poudel, S., Phoha, V. V., Jacob, R. J., Dennett, D. C., & Hirshfield, L. M. (2020). *Entropic Brain-Computer Interfaces*.
- Neupane, A., Saxena, N., Hirshfield, L. M., & **Bratt, S. E.** (2019). The Crux of Voice (In) Security: A Brain Study of Speaker Legitimacy Detection. In *NDSS*.
- Qin, J., Hemsley, J., & **Bratt, S.E.** (2018). "Collaboration capacity: Measuring the impact of cyberinfrastructure-enabled collaboration networks." In: *Science of Team Science (SCITS) 2018 Conference*, Galveston, Texas, May 21-24, 2018.
- **Bratt, S. E.**, Hemsley, Jeff, Qin, Jian, and Costa, Mark. "Big Data, Big Metadata, and Quantitative Study of Science: A Workflow Model for Big Scientometrics." *Association for Information Science and Technology (ASIST) 2017*.
- **Bratt, S.E.**, Semaan, Bryan, and Franco, Zeno. "Translation in Personal Crisis: Opportunities for Wearable ICT Design." *Proceedings of the 14th International Conference on Information Systems for Crisis Response and Management (ISCRAM 2017)*. Albi, France.
- Hincks, S. W., **Bratt, S.E.**, Poudel, S., Phoha, V. V., Jacob, R. J., Dennett, D. C., & Hirshfield, L. M. (2017). *Entropic Brain-computer Interfaces-Using fNIRS and EEG to Measure Attentional States in a Bayesian Framework*. In *PhyCS* (pp. 23-34).
- **Bratt, S.E.** "Toward an Open Data Repository and Meta-Analysis of Cognitive Data using fNIRS Studies of Emotion." *HCI 2017. International Conference on Augmented Cognition*. Springer International Publishing, 2017.
- Sharma, Sarika, Sawyer, Steve, Osterlund, Carsten, **Bratt, S.E.**, and Willis, Matthew. "Theorizing Messy Work: Four perspectives on distributed scientific collaborations." *GROUP 2016 Proceedings* (2016).
- Costa, Mark, and **Bratt, S.E.** "Truthiness: Challenges Associated with Employing Machine Learning on Neurophysiological Sensor Data." *HCI 2016. International Conference on Augmented Cognition*. Springer International Publishing, 2016.
- Serwadda, A., Phoha, V. V., Poudel, S., Hirshfield, L. M., Bandara, D., Bratt, S. E., & Costa, M. R. (2015, September). fNIRS: A new modality for brain activity-based biometric authentication. *In 2015 IEEE 7th International Conference on Biometrics Theory, Applications and Systems (BTAS)* (pp. 1-7). IEEE.
- Hirshfield, Leanne, Costa, Mark R., Bandara, and D., **Bratt, S.E.** "Measuring situational awareness aptitude using functional near-infrared spectroscopy." *International Conference on Augmented Cognition*. Springer International Publishing, 2015.

#### REFEREED POSTERS & PANELS

- **Bratt, S.E.** (2019). The Co-Production of Data Sharing Norms: From the lab to CI-enabled data repositories and back again. In *Lab Studies Reloaded? Machine Learning, Ethnography, and Critical STS. Society for the Social Studies of Science (4S) 2019 Proceedings*.
- **Bratt, S.E.**, Qin, J., & Hemsley, J. (2019). A Closer Look at Data Co-authorship: Team size trends in 'big science'. *In 17th International Conference on Scientometrics and Informetrics, ISSI 2019* (pp. 2664-2665).
- **Bratt, S. E.**, Qin, J., Hemsley, J. J., Costa, M. R., & Wang, J. (2016). Validating science's power players: scientometric mixed methods for data verification in identifying influential scientists in a genetics collaboration community. *iConference 2016 Proceedings*.

#### REFEREED WORKSHOPS

- Citational Justice League. “Braving Citational Justice.” *Computer-Supported Cooperative Work (CSCS)*. 2022 (*Forthcoming*).
- **Bratt, S.E.** “Unapologetically feminist scientists: Social media as resiliency-making in academic research.” *North East Science and Technology Studies 2020 Graduate Student Conference (NESTS)*. Rensselaer Polytechnic Institute. Troy, NY. March 5-6, 2020.
- **Bratt, S.E.** and McDonough, C. “Extending and Destabilizing the Lab.” *Intersectionality in the Digital Humanities*. Syracuse University Bird Library. 2019.

## FELLOWSHIPS AND AWARDS

**Laboratory for Innovation Science at Harvard (LISH)**  
Science Production Function Society Fellow (SPFS)

Cambridge, MA  
May 2018-August 2019

- Designed survey instruments for qualitative and quantitative data collection
- Recruited and interviewed active R1 research scientists to refine instruments
- Analyzed interview data using open coding methods and RQDA software
- Conducted literature review on research groups to interpret findings
- Wrote and edited data analysis summary reports to submit to funder

**Syracuse University School of Information Studies**  
Doctoral Summer Research Grant (\$6,500)

Syracuse, NY  
June 2017

**Syracuse University School of Information Studies**  
Recipient of the Master’s Award in Library and Information Science

Syracuse, NY  
May 2014

## RESEARCH EXPERIENCE

**Graduate Research Assistant, Metadata Lab**  
Syracuse University School of Information Studies

August 2014 - present

Project: Cyberinfrastructure (CI)-enabled Science Collaboration Network Analysis

- Analyze scientific collaboration network data from trace data of NCBI’s GenBank
- Conduct exploratory and confirmatory statistical analysis, and visualization (R, Infomap)
- Apply, test, and develop team science theory to inform methodologies for scientometrics data analysis and policymaking in the science of science
- Merge data from Dataverse patent records with GenBank metadata
- Produce and distribute research findings through formal publication venues and project website
- Assist in managing a team of graduate assistants (master’s level) to support project analytic goals and educational objectives

**Research Practicum**  
Syracuse University School of Information Studies

September 2017 – December 2017

Practicum advisor: Jian Qin

Project: GenBank Sequence Submission Processes and Collaborative Practices of Geneticists

- Developed an IRB amendment, instrument, consent form, and solicitation script to collect in-depth interview data with geneticists on practices related to cyber-enabled data repositories.
- Acquired and analyzed big metadata records with SQL and R to analyze macro-level properties of the interviewees’ scientific collaboration networks.
- Researched automated transcription software to rapidly and accurately transcribe interview data and to analyze collaborative work practices facilitated by CI-enabled repositories.
- Published and presented results to *Social Studies of Science* (4s) panel

**Research Practicum**  
Syracuse University School of Information Studies

September 2016 - April 2017

Practicum advisor: Bryan Semaan

Project: Transition Resilience: Participatory Design of Wearables for Veterans

- Developed an information communication technology (ICT) wearable prototype using Balsamiq
- Conducted a literature review on biomedical informatics and feminist science and technology studies to inform a participatory-design study of the use and non-use of wearable technology for collaborative detection and navigation of personal transitions
- Recruited vulnerable population for a participatory design study of a smart wearable technology
- Coded transcript data and performed content analysis

**Research Assistant and Neuroimaging Technician**

September 2014 – August 2016

Syracuse University S.I. Newhouse School of Public Communications

Media Interface Network Design (M.I.N.D.) Lab

- Designed experiments tailored to functional near-infrared spectroscopy (fNIRS) data collection
- Conducted literature reviews in neuroimaging of emotion
- Collected data using functional near-infrared spectroscopy (fNIRS) and EEG
- Analyzed participant survey data and produced literature reviews of relevant empirical work

**TEACHING EXPERIENCE**

**Research Methods in Information Science**

April 2022 – June 2022 (anticipated)

- Lead lecturers and lab sections for research methods in information science in a synchronous, 100% online course
- Facilitate research projects for LIS graduate students to apply to academic, public, and special library applications
- Provide feedback to students on assignments and in constructive conversation

**Programming Foundations and Applications (Python)**

September 2019-January 2020

- Led lab and seminar in python for 25 undergraduate students
- Mentored students in office hours to foster participatory learning
- Worked collaboratively with team to develop learning outcomes and graded homework and labs

**Teaching Fellow**

February 2017 - June 2017

iSchool Inclusion Institute (i3), University of Pittsburgh School of Computing and Information

- Co-developed syllabus material for a 2-week intensive programming module to teach underrepresented undergraduate students introduction to computer programming
- Designed and taught labs in python and R on data acquisition, cleaning, and statistical analysis
- Mentored students to support their pursuit of computing careers and/or iSchool higher education

**Teaching Practicum**

January 2017 - May 2017

Syracuse University School of Information Studies

Course: *Natural Language Processing*

- Directed a lab for graduate students in linguistics, computer science, and information management by instructed students in POS-tagging lecture and python lab session
- Guest lectured on applied NLP in text ambiguity context of GenBank repository metadata
- Established learning outcomes connecting NLP course content to research problems

**Teaching Practicum**

September 2016 - December 2016

Syracuse University School of Information Studies

Course: *Information Visualization*

- Designed and delivered lecture and lab for visualization and cognition

- Managed content management software (CMS) in coordination with the professor of record
- Engaged students by assisting with technical and conceptual issues with R for data visualization
- Developed student assessment (quiz and labs) to evaluate learning outcomes

**Internship Manager and Research Assistant**

June 2015 - August 2016

Syracuse University, S.I. Newhouse School of Public Communications

- Recruited, interviewed, and worked with a team of PIs to manage 120 interns for the Media Interface Network Design (MIND) lab over the course of 4 semesters
- Trained students on fNIRS technology, experiment design, and software (R, python)

**GRADUATE COURSES**

**PhD, Information Science & Technology**

Introduction to Information Science (IST 800)

Theories of Digital Technology (IST 830)

Statistical Methods in Information Science (IST777)

Social Network Analysis (IST 800)

Elicitation & Analytical Techniques (IST 800)

Theories of Information (IST 790)

Sociological Theory (SOC 611)

**MS, Library and Information Science; Certificate of Advanced Study, Data Science**

Data Mining

Natural Language Processing

Information Management for Information Professionals

Information Policy

Information Visualization

Information Organization & Access

Introduction to Database Administration Concepts & Management Systems

Applied Data Science

Reference & Information Literacy Services

Planning, Marketing, Assessment of Services

**OTHER EXPERIENCE**

**Vice President, Graduate Science Policy Group (GSPG)**

September 2019 – December 2020

Syracuse University

- Co-create mission and vision with GSPG president and Syracuse community
- Organized social and science policy events, e.g., climate change panel, I-81 community grid debate, and graduate student policy presentations and game night
- Hosted and produced GSPG podcast <https://gspg.syr.edu/podcast/>

**Treasurer, Graduate Science Policy Group (GSPG)**

Syracuse University

- Managed GSPG budget, applied for, and administered funding for GSPG events
- Advised GSPG leadership and members on budget status to inform annual program of activities
- Researched funding opportunities to expand scope of invited speakers for climate policy series

**Graduate Assistant**

June 2012 - May 2014

Syracuse University School of Information Studies, Employer Relations & Career Services

- Validated and analyzed graduate placement survey data and created reports for iSchool Dean of Faculty & Student Services on national graduate employment comparison, descriptive placement statistics, timeline metrics, and information visualization
- Designed and distributed graduate employment survey using Qualtrics Survey software.
- Designed and presented competitive intelligence research and analysis to inform the development of a proposal for an undergraduate data science minor

## SERVICE

### ***Departmental***

#### **Co-Founding Organizer, iSchool Research Day**

May 2018 – January 2020

Syracuse University School of Information Studies,

- Designed and organized university-wide research day to facilitate dedicated research symposium for increased inter-departmental collaboration between faculty and graduate students.
- Consult with department grant manager to organize annual instantiation of the event.

#### **PhD Student Representative**

September 2017 - May 2018

Syracuse University School of Information Studies, Personnel Committee

- Reviewed materials for 3<sup>rd</sup> year annual review candidates, administrative policy documents, write letters of recommendation for candidates.

#### **Co-Founder, Doctoral Writing Group**

September 2016 - May 2017

Syracuse University School of Information Studies

- Founded a writing group for iSchool doctoral students
- Managed weekly writing sessions, created marketing materials, and promoted events
- Collaborated with SU Graduate Student Organizer to organize a writing workshop

### ***Disciplinary***

- *iConference Reviewer 2016 – present*
- *ACM CHI Reviewer 2017 – present*
- *ACM CSCW Reviewer 2017 - present*

## PROFESSIONAL ASSOCIATIONS

- Professional member the Association of Information Science & Technology (May 2016 -present)
- Professional member of the Association of Computing Machinery (May 2016 - present)

## SKILLS

- R, Python, Jupyter Notebook, Map-Reduce, Hadoop, Gephi, SPSS, HTML5, MapEquation, nVivo.
- Experience with qualitative techniques (experiment design, interview, focus groups, think aloud, survey design), quantitative techniques (unsupervised/supervised ML, regression, social network analysis), and UX techniques (lab studies, participatory design, speculative design, making tea)
- Languages: English; intermediate Italian; basic Spanish; beginner Farsi (spoken)