Indira Sen

Computer Science P.H.D Candidate interested in the application of NLP methods in Computational Social Science

Unter Sachsenhausen 6-8, Cologne 50667, Germany

+49(221)47694-253 | Indira.Sen@gesis,org | https://indiiigo.github.io/ | Indiiigo | @indiiigosky | Google Scholar

Research Interests

I'm interested in improving the measurement of psychosocial constructs, including political and prejudicial attitudes and behaviors, from digital trace data using mixed methods and natural language processing. My research aims to illuminate and characterize the potentials, pitfalls, and consequences of understanding such attitudes from unobtrusive digital traces.

Education

RWTH-Aachen and GESIS - Leibnitz Institute for Social Sciences   *Cologne, Germany*

P.H.D in Computer Science   *Oct, 2018 - Oct, 2023 (exp)*

Advisor: Prof. Claudia Wagner

Indraprastha Institute of Information Technology (IIIT-D)   *New Delhi, India*

M.S in Computer Science   *Aug, 2015 - Dec, 2017*

Advisor: Prof. Ponnurangam Kumaraguru (PK)

GPA: 8.67/10

Vellore Institute of Technology (VIT)   *Vellore, India*

B.S in Computer Science   *Jul, 2010 - May, 2014*

GPA: 9.1/10

Honors & Awards

2022	**Research Award for Interdepartmental Collaboration,** for interdisciplinary research collaborations	*GESIS*
2021	**Summer Intern Award for Outstanding Innovation,** Nokia Bell Labs	*Cambridge, UK / virtual*
2021-2023	**Best Reviewer Award,** ICWSM (2021, 20222, 2023), The WebConf (2023)	
2020	**Travel Grant for attending EMNLP,**	*virtual*
2020	**Selected for SAGE Text-Mining Fellowship,** SAGE, Ocean	*London, UK (virtual)*
2020	**Selected as Facilitator for the Alan Turing Institute Data Study Group,** 2 week hackathon where we worked with an Industry partner (CatsAI) to deploy explainable AI predictions	*virtual*
2020	**Travel Grant,** For attending FAT* 2020	*Barcelona, Spain*
2019	**Travel Grant,** For attending Summer Institute in Computational Social Science (SICCS), Germany	*Bamberg, Germany*
2017	**TA Excellence Award,** Foundations of Computer Security	*IIIT-Delhi, India*
2017	**Accepted to Summer@EPFL,** One of 60 interns selected out of 2000 applications	*EPFL, Switzerland*
2015-2016	**Dean's Merit List,** For Academic Performance	*IIIT-Delhi, India*
2015	**GATE Scholarship,** Scholarship for Master's Studies	
2011-2014	**Merit Scholarship,** For Outstanding Academic Achievement	*VIT, Vellore*

Publications

Journal Articles

Insider Stories: Analyzing Internal Sustainability Efforts of Major US Companies from Online Reviews.   *2023*

Indira Sen, Daniele Quercia, Licia Capra, Matteo Montecchi, and Sanja Šćepanović.
Humanities and Social Sciences Communications 10, no. 1 (2023): 1-9.

Depression at Work: Exploring Depression in Major US Companies from Online Reviews. *2022*
INDIRA SEN, DANIELE QUERCIA, MARIOS CONSTANTINIDES, MATTEO MONTECCHI, LICIA CAPRA, SANJA SCEPANOVIC, and RENZO BIANCHI.
PROCEEDINGS OF THE ACM ON HUMAN-COMPUTER INTERACTION. TO BE PRESENTED AT THE 25TH ACM CONFERENCE ON COMPUTER-SUPPORTED COOPERATIVE WORK AND SOCIAL COMPUTING (CSCW)

Visualizing Internal Sustainability Efforts in Big Companies. *2022*
CHIARA CECCARINI, EDYTA PAULINA BOGUCKA, INDIRA SEN, MARIOS CONSTANTINIDES, CATIA PRANDI, and DANIELE QUERCIA.
IEEE COMPUTER GRAPHICS AND APPLICATIONS

A Total Error Framework for Digital Traces of Human Behavior on Online Platforms *2021*
INDIRA SEN, FABIAN FLOECK, KATRIN WELLER, BERND WEISS, and CLAUDIA WAGNER.
PUBLIC OPINION QUARTERLY

Conference Articles

Counterfactually Augmented Data and Unintended Bias: The Case of Sexism and Hate Speech Detection *2022*
INDIRA SEN, MATTIA SAMORY, CLAUDIA WAGNER and ISABELLE AUGENSTEIN.
ANNUAL CONFERENCE OF THE NORTH AMERICAN CHAPTER OF THE ASSOCIATION FOR COMPUTATIONAL LINGUISTICS (NAACL) *short paper*

How Does Counterfactually Augmented Data Impact Models for Social Computing Constructs? *2021*
INDIRA SEN, MATTIA SAMORY, FABIAN FLOECK, CLAUDIA WAGNER and ISABELLE AUGENSTEIN.
CONFERENCE ON EMPIRICAL METHODS ON NATURAL LANGUAGE PROCESSING (EMNLP)

"Call me sexist, but…" : Revisiting Sexism Detection Using Psychological Scales and Adversarial Samples *2021*
MATTIA SAMORY, INDIRA SEN, JULIAN KOHNE, FABIAN FLOECK, and CLAUDIA WAGNER.
INTERNATIONAL CONFERENCE ON WEB AND SOCIAL MEDIA (ICWSM)

On the Reliability and Validity of Detecting Approval of Political Actors in Tweets *2020*
INDIRA SEN, FABIAN FLOECK, and CLAUDIA WAGNER.
CONFERENCE ON EMPIRICAL METHODS ON NATURAL LANGUAGE PROCESSING (EMNLP)

Empowering First Responders through Automated Multimodal Content Moderation *2018*
DIVAM GUPTA, INDIRA SEN, NIHARIKA SACHDEVA, PONNURANGAM KUMARAGURU, ARUN BALAJI BUDURU.
IEEE INTERNATIONAL CONFERENCE ON COGNITIVE COMPUTING *Best Paper Award*

Worth its Weight in Likes: Towards Detecting Fake Likes on Instagram *2018*
INDIRA SEN, ANUPAMA AGGARWAL, SHIVEN MIAN, SIDDHARTH SINGH, PONNURANGAM KUMARAGURU, ANWITAMAN DATTA.
WEBSCI *short paper*

Workshop Articles

What Human Rationales Tell us about Machine Explanations *2021*
INDIRA SEN, MATTIA SAMORY, FABIAN FLOECK, CLAUDIA WAGNER
HCI+NLP WORKSHOP, IN CONJUNCTION WITH EACL

Measuring Public Opinion Online: Potentials and Pitfalls *2020*
INDIRA SEN, FABIAN FLOECK, CLAUDIA WAGNER
WOMEN IN MACHINE LEARNING (WiML), IN CONJUNCTION WITH NEURIPS *Poster*

A Twitter Corpus for Hindi-English Code Mixed POS Tagging *2018*
KUSHAGRA SINGH, INDIRA SEN, PONNURANGAM KUMARAGURU.
WORKSHOP ON NATURAL LANGUAGE PROCESSING FOR SOCIAL MEDIA (SOCIALNLP), IN CONJUNCTION WITH ACL *Data Paper*

Language Identification and Named Entity Recognition in Hinglish Code Mixed Tweets *2018*
KUSHAGRA SINGH, INDIRA SEN, PONNURANGAM KUMARAGURU. ACL STUDENT RESEARCH WORKSHOP

Experience

Snap Inc. *Santa Monica, USA*
RESEARCH INTERN, COMPUTATIONAL SOCIAL SCIENCE. ADVISOR: DR. FRANCESCO BARBIERI *Jul 2022 - Oct 2022*
- Developing a Stakeholder-centred Framework for Multilingual Sensitive Content Detection

Nokia Bell Labs
Cambridge, UK (virtual)

INTERN AT SOCIAL DYNAMICS GROUP. ADVISOR: DR. DANIELE QUERCIA
Jun 2021 - Aug 2021

- Understanding and Characterizing the sustainability efforts of companies from employee reviews.
- Developed mixed-method techniques for detecting employees' views on their employer's sustainability efforts using a deep-learning framework (SBERT)
- Results from the internship were published at CSCW'22 and IEEE Vis'22.

SAGE Ocean
London, UK (virtual)

SAGE OCEAN FELLOW. ADVISOR: DR. DANIELA DUCA
Oct 2020 - Dec 2020

- Contributing to a Text cleaning WebApp called Texti
- Working on NLP transformations in Python and documentation
- Results from the Fellowship are described here.

Computational Social Science Department, GESIS
Cologne, Germany

DOCTORAL RESEARCHER. ADVISORS: PROF. CLAUDIA WAGNER, DR. KATRIN WELLER
Oct 2018 - Present

- Identifying, Characterizing and Quantifying errors that occur when measuring attitudes from Digital Traces
- Building robust and interpretable NLP methods for measuring social science phenomena
- Large scale Twitter data collection using Amazon Web Services (AWS) as a service for Social Scientists.

Precog Research Lab, IIIT Delhi
New Delhi, India

RESEARCH ASSOCIATE. ADVISORS: PROF. PONNURANGAM KUMARAGURU AND PROF. ARUN BALAJI BUDURU
Dec 2017 - Aug 2018

- Landscaping the fake like marketplace on Instagram and characterizing fake likers, and their attack vectors.
- Detecting Multimodal Hatespeech on Social Media

CHILI Lab, École polytechnique fédérale de Lausanne
Lausanne, Switzerland

SUMMER INTERN, ADVISOR: PROF. PIERRE DILLENBOURG
Jun 2017– Aug 2017

- Worked on inferring dependencies between EPFL courses based on Concept Mining and grading patterns

Nanyang Technological University
Singapore

RESEARCH ASSISTANT, ADVISOR: PROF. ANWITAMAN DUTTA
Jan 2017– May 2017

- Master's Thesis: Worked on detecting fake engagement on Instagram.

Teaching, Mentorship, and Academic Service

Translation Tutorial on the Total Error Paradigm for Social Inferences
Barcelona, Spain

FAT* 2020
Jan 2020

- Tutorial on diagnosing errors and biases in observational studies from digital traces

Introduction to Python and Data Science with Python
Cologne, Germany

UNIVERSITY OF COLOGNE
Oct, 2019

- Interactive, hands-on five-day lecture series for teaching introductory python concepts to social science doctoral candidates

Mentorship

SUPERVISED ON CO-SUPERVISED THESES

- Esi Doda (RWTH Aachen). Master's Thesis. Racial Disparities in Social Media Commentary about Football
- Vani Agarwal (IIIT-D). Master's Thesis. Improving Content Moderation through Co-Training
- Kushagra Singh (IIIT-D). Bachelor's Thesis. Information Extraction Tools for Code-Mixed Hindi-English Social Media Content

PC member

WEBCONF (2023), ICWSM (2021, 2022), ACL STUDENT RESEARCH WORKSHOP (2020, 2021, 2022), WIKIWORKSHOP (2022),

HCI+NLP WORKSHOP (2022)

Reviewer

CSCW (2019, 2020), THEWEBCONF (2020, 2021), EMNLP (2020), ACL ROLLING REVIEW (2021, 2022), EPJ DATA SCIENCE (2022)

Skills

Programming: Python, R, Java, C++, C, MongoDB, SQL, Bash

Libraries/Tools: scikit-learn, pytorch, tensorflow, huggingface, keras, pandas, NLTK, NetworkX, Amazon Web Services, Amazon Mechanical Turk, Prolific, Qualtrics