Somang Nam

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I am an individual with a passion for many technical fields, from designing solutions to delivering artifacts that solve challenging problems. I enjoy tackling hard problems and communicating with others. Throughout my career, I have proven myself to be a fast learner in various fields, who asks the right questions to understand the problem.

I sit at the junction between Software Engineering, Data and Machine Learning applications, and Human-Computer Interaction (UI/UX).

As a software engineer, my technical expertise spans many areas of Computer Science, including system design, full-stack web development, data engineering, data analytics, machine learning applications, and game development.

As a scientific researcher, I have a solid background in designing and conducting interdisciplinary research in Human-Computer Interaction, Accessibility, and Human Factors (digital ergonomics). I can perform mixed data analytics (both quantitative and qualitative) and share the findings with academic or public audiences using visualizations and presentations. My time in academia also proved my ability to share findings and discuss with various levels of knowledgeable audiences.

Google Scholar GitHub LinkedIn Research Gate

Degrees

Ph.D.	Industrial Engineering - Human Factors Digital Ergonomics	University of Toronto	2021
M.Sc.	Computer Science - Human-Computer Interaction	Toronto Metropolitan (Ryerson) University	2016
H.B.Sc.	Computer Science, Mathematics & Ethnomusicology	University of Toronto	2013

Employment history

I've spent some time as an adjunct lecturer/professor or as a teaching assistant at the university, which are listed separately.

Year (s)	Organization Name, Position Title and specific responsibilities
2022 - 2022	The Bank of Nova Scotia, - Senior Product Engineer Tech Lead (2022, July - Sept) • Was responsible to lead a data quality team of five developers as a part of Data Enablement, Customer Insights, Data & Analytics office. • Making the transition from on-premise to GCP • Airflow, Jenkins, Maven, Spark, HDFS, MinIO, Presto, EDL, Docker - Data Engineer Manager (2022, May - July)

	• Developed data profiling module in PySpark and proposed an anomaly detection module design using BigQueryML
2021 - 2022	National Research Council Canada, Technical Officer-3 • Development of an open-access platform that calculates high-precision quantities related to light and lighting stimuli based on scientific documents (< 25k monthly traffic). • Utilized the WebWorker to reduce the average calculation speed by 64% React, Node, MathJS, ChartJS, webpack • Found the flaw in legacy software using IEEE754 and polished the codebase to mitigate the precision error
2018	PAVO Digital - Toronto Metropolitan University, Software Developer • Developed a caption editing software using ElectronJS and Python
2016 - 2021	University of Toronto, Graduate Researcher • Research member of Inclusive Design and Media Centre
2016	Toronto Metropolitan University, Data Engineer, Contract • For a web crawling and data mining project about social commerce platform data using Python and Selenium into MySQL
2013	Universal Music Group (NBC Universal Toronto), Mobile Developer, Contract • Implemented an Android application prototype for music remix using Youtube API
2012	University of Toronto, Data Engineer, Contract • iSchool and political economics collaborative project. Developed text data mining pipelines using Python from the Twitter accounts of U.S. congress candidates (~750 accounts) into PostgreSQL. Also collected politically active Twitter users (2.2 million) and a total of 500,000 tweets over six weeks.

Projects (personal and team collaboration)

Projects other than school coursework and exclusion of professional experiences. Thesis and research projects are included.

Year	Project
2022	• React (MaterialUI) + FastAPI side project (in progress) for memorabilia recording platform building of geological objects • Scraping off some of the commercial websites for wristwatches, using Selenium and SQLite3
2021	• Worked on a generative art project with multiple artists, using the processingJS and GlitchJS
	• A geolocation-based meta-verse NFT project using Web 3.0 API from Moralis and Ethereum smart contract in Solidity (PoC)
	• Consulted and designed the software development plan for a Python-web-based voice assistant using a customized voice of the elderly. Designed the blueprint to use the Mozilla TTS (Coqui) with Japanese voice clips transfer learning from Kokoro corpus (WIP)
2016-2020	Ph.D. project

	• Supervised by Prof. Mark Chignell and Prof. Deborah Fels • Thesis committee: Prof. Gerald Penn and Prof. Susan McCahan • Designed and implemented a quality assessment system for Closed Captioning using Django backend, web frontend, and SQLite database. • The system utilized Keras deep neural networks, which were trained from synthetic data based on statistical user probability models using the Signal Detection Theory framework
2013-2015	M.Sc. project • Supervised by Prof. Deborah Fels and Prof. Alex Ferworn • Thesis committee: Prof. Frank Russo and Prof. Alireza Sadeghian • Design and development of a vibrotactile composition editor implemented using Java
2013	• Participated PennApps two times as a UToronto team. 1. A little dropbox integrated automated website/album web app. Users could simply create a media album of all their content with a single click. 2. Encode your Facebook posts with a private key, and decode only with your close friends who own your private key. Extension on Google Chrome.
2013	• B.Sc. project: Designed and developed a special web browser for elders with Parkinson's (i.e., shaky hands). Used clustering algorithm to find the hovering finger on a tabletop touch input device (Microsoft Surface Tabletop)
2012	• Developed a side-scroller game using a Nintendo Wii console (teaser) and presented at the Research In Action & Level Up Showcase. Implemented using Unity3D and Blender.

Stack

Python, JavaScript, Java/Scala, Spark, React.js, SQLalchemy, SQL (SQLite3, MySQL, Postgres), NoSQL, Bash, Git, Docker, Airflow, Django, FastAPI (Swagger.io), Selenium, Electron, HTML+CSS, Keras, Tensorflow, MATLAB, R, dbt, Unity3D (C#), Google Cloud Platform, Jest, Webpack, NodeJS, BigQuery, Rest API

Certificates

- Data Engineering, Big Data, and Machine Learning on GCP by Google Cloud on Coursera (credential)
- Foundations of User Experience (UX) Design by Google on Coursera (credential)
- Deep Learning Institute Certificate of Competency: Fundamentals of Deep Learning for Computer Vision by NVIDIA (credential)
- Member of IEEE Computer Society Technical Committee on Semantic Computing No.96579108

Awards and achievements

Exclusion of research funding

Year	Achievement
2021	Runner-up - oral presentations in Data Analytics, AI & Robotics, UTERC 2021 ($200)

2020-2021	University of Toronto MIE Doctoral Completion Award ($12,000)
2020	Research grant from the Broadcasting Accessibility Fund, To develop an automated quality assessment system for Closed Captioning, $92,161
2016-2020	University of Toronto MIE Graduate Fellowship ($12,500 annually)
2018	IEEE AIKE Best Paper
2016-2021	Graduate Stipendium - issued by Toronto Metropolitan University funding from the Natural Sciences and Engineering Research Council (NSERC) Discovery Canada ($22,000 annually)
2015	Governor General Gold Medal nomination for thesis
2014-2015	Toronto Metropolitan University Graduate Fellowship ($12,000 annually)
2013-2015	Graduate Stipendium - issued by Toronto Metropolitan University funding from the Social Sciences and Humanities Research Council (SSHRC) and GRAND Canada ($18,000 annually)
2013-2014	Toronto Metropolitan University Graduate Award ($8,000)
2013-2016	Google Code Jam (qualified for three consecutive years, Round 1 for 2013 entry top 20%)
2006	- Medalist, FIRST (For Inspiration and Recognition of Science and Technology) Vex Robotics official tournament - 1st (2006) and 2nd (2005) place in Civil Canada Arm, McMaster Engineering & Science Olympics

Peer-reviewed publications & presentations

Life-Time Summary	
Refereed Journal Articles (in review)	4 (1)
Refereed Conference Proceedings (presentations)	3 (7)
Paper Reviews	4

Selected publications

- [Submitted] Nam, S., Fels, D., & Chignell, M. (2022). Developing a Closed Captioning quality assessment system using a multi-label classifier with active learning from Deaf and Hard of Hearing viewers. Applied Intelligence (IF=5.019)
- Spitschan, M., Mead, J., Roos, C., Lowis, C., Griffiths, B., Mucur, P., Herf, M., Nam, S., & Veitch, J. A. (2022). luox: novel validated open-access and open-source web platform for calculating and sharing physiologically relevant quantities for light and lighting. Wellcome Open Res, 6, 69. doi:10.12688/wellcomeopenres.16595.3 (SJR IF=2.727) (link)
- Nam, S., Fels, D., & Chignell, M. Toward a Subjective Assessment System for Closed Captioning Quality. SMPTE Motion Imaging Journal, 130(3), 35-44, White Plains, NY (2021) (link)
- Nam, S., Fels, D. I., & Chignell, M. H. Modeling Closed Captioning Subjective Quality Assessment by Deaf and Hard of Hearing Viewers. IEEE Transactions on Computational Social Systems (SCIE, IF = 5.36). (2020) (link)

- Nam, S. Designing a Subjective Assessment System for the Quality of Closed Captioning Using Artificial Intelligence. Broadcast Engineering and Information Technology Conference, Washington, USA (2020) (link)
- Nam, S., & Fels, D. Simulation of Subjective Closed Captioning Quality Assessment Using Prediction Models. International Journal of Semantic Computing (ESCI, IF=1.03), 13(01), 45-65. (2019) (link)
- Nam, S., & Fels, D. Assessing closed captioning quality using a multilayer perceptron. In 2018 IEEE First International Conference on Artificial Intelligence and Knowledge Engineering (AIKE) (pp. 9-16). IEEE. (2018) (link)
- Nam, S., & Fels, D. Design and evaluation of an authoring tool and notation system for vibrotactile composition. International Conference on Universal Access in Human-Computer Interaction (pp. 43-53). Springer, Cham. (2016) (link)

Presentations

- *luox* An open-source, open-access web platform implementing international standards for the quantification of light, Lightning Talks track, FOSDEM 2022 - Free and Open-source Software Developers' European Meeting, Brussels, Belgium (2022) (link)
- Towards an automatic caption quality assessment model reflecting the subjective views of Deaf, and Hard of Hearing audiences, Oral Presentations in Data Analytics, AI & Robotics, UTERC 2021, Toronto, Canada (2021) (link)
- Towards designing a subjective assessment method for the quality of Closed Captioning using deep neural networks. Internal webinar for OVPECI, Toronto Metropolitan University, Canada (2020)
- Designing a Subjective Assessment System for the Quality of Closed Captioning Using Artificial Intelligence. NAB Show, Las Vegas, USA (2020)
- Nam, S. and Fels, D. Assessing closed captioning quality using a multilayer perceptron. IEEE Artificial Intelligence and Knowledge Engineering, Laguna Hills, California, USA (2018)
- Design and Evaluation of an Authoring Tool and Notation System for Vibrotactile Composition. Human-Computer Interaction International 2016, Toronto, Canada (2016)
- Designing a Notation System for Vibrotactile Composition. Ontario Accessibility Innovation Showcase, Toronto, Canada (2015)

Reviews

- ACM CHI 2023
- IEEE Transactions on Computational Social Systems (TCSS), 2022
- Graphics Interface (GI 22), 2022
- The Special Interest Group on Computer-Human Interaction (ACM-SIGCHI), 2018
- International Conference on Computers Helping People with Special Needs (ICCHP), 2014

Teaching experience

List of courses that I have participated in as a sessional lecturer or as a (lead) Teaching Assistant (TA). I provided lectures, created course outlines, and designed and held practical tutorials, assignments, projects, and exams

Adjunct Professor / Lecturer	
2022	CPS613/CP8205 Human-Computer Interaction, Toronto Metropolitan University
2019	(C)ITM350 Concepts of e-Business, Toronto Metropolitan University
Lead TA / Substitute Lecturer	
2018	ITM350 Concepts of e-Business, Toronto Metropolitan University
	MIE344 Ergonomic Design of Information Systems, University of Toronto
2017 - 2018	MIE253 Data modelling, MS Access, MySQL for OLAP with Java, University of Toronto
2016 - 2017	ITM780 Web design and Management, JavaScript and HTML5, Toronto Metropolitan University
2015	ITM445 Multimedia in Business, Adobe Suites, Toronto Metropolitan University
TA	
2016	CPS209 Computer Science: Object-Oriented Programming, C++, Toronto Metropolitan University
2015	CPS506 Comparative programming languages, Haskell and Rust, Toronto Metropolitan University
2014 - 2015	CPS305 Data Structure, Java, Toronto Metropolitan University
2013 - 2014	CPS125 Digital Computation and Programming, Matlab, Toronto Metropolitan University
2013	CPS105 Intro to Computer Science, Java, Toronto Metropolitan University
	CPS118 Introductory Programming for Scientist, C++, Toronto Metropolitan University

Course development

- CPS613/CP8205, Human-Computer Interaction, created a full course material, assignments, and project. (2022)
- ITM350, Concepts of e-Business, redesigned the course and created projects and assignments. (2018)
- ITM780, Web Design and Management, assisted Professor Deborah Fels in redesigning the course and assignments. (2017)