Nussara (Firn) **Tieanklin**

Computer Science Researcher · Data Science for Social Goods · Rural Community Networks · Teaching Assistant

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Education

University of Washington — *Washington, U.S.A*

Ph.D. in Computer Science and Engineering (Advanced Data Science Option) — *June 2021 - Present*

Advised by Prof. Kurtis Heimerl
Affiliated to Information and Communication Technology for Development (ICTD) Lab

Bachelor of Computer Science and Systems (CSS Honors) with a minor in Informatics — *September 2017 - June 2021*

Honors thesis: *Deep Model Compression* advised by Prof. Juhua Hu
In-major GPA: 3.84 | 2019 - 2021 Annual Dean's List

Skills

Research Interests	Data Analytic/Visualization, Mixed Methods Research, Community-owned Cellular Networks
Softwares/Libraries	PyTorch, Colab, TensorFlow, scikit-learn, D3.js, Tableau, NumPy, Pandas, Web Services, Git, Postgres, Heroku, AWS, Node.js, APIs, Shiny, UNIX, bash, Android Studio,
Languages	Python, Java, Java JS, SQL, C, R, HTML/CSS

Publications

"I will just have to keep driving": A Mixed-methods Investigation of Lack of Agency within the Thai Motorcycle Rideshare Driver Community — *2024*

Nussara Tieanklin*, *Joseph Breda**, *Kurtis Heimerl* — *CSCW 2024*

Notably Inaccessible – Data Driven Understanding of Data Science Notebook (In)Accessibility — *2023*

*Venkatesh Potluri**, *Sudheesh Singanamalla**, ***Nussara Tieanklin***, *Jennifer Mankoff* — *ASSETS 2023*

Menopause Legacies: Designing to Record & Share Menopause Experiences Across Generations — *2024*

Shaan Chopra, Katherine Juarez, Lisa Orii, ***Nussara Tieanklin****, Sean Munson, James Fogarty* — *CSCW 2024*

The Low Impact of COVID-19 on Rural Community Network Traffic — *2021*

Nussara Tieanklin*, Matthew Johnson, Kurtis Heimerl* — *ACM COMPASS 2021*

Air Pollutions in Ports — *2022*

Nussara Tieanklin — *nussarafirn.github.io/air-pollutions-in-ports*

mtunzi: a programmable approach to software-defined network access control and captive networking for low-resource setting — *2021*

Innocent Ndubuisi-Obi Jr, ***Nussara Tieanklin*** — *nussarafirn.github.io/mtunzi*

Weight-Based Deep Model Compression of DGA Detectors for Small Devices — *2021*

Nussara Tieanklin *(Computer Science & Systems Honors)*

Work Experience

Graduate Researcher & Undergraduate Researcher — *March 2019 - Present*

Information and Communication Technology for Development (ICTD) Lab at Paul G. Allen School (CSE)

- Applies mixed-methods research to analyze how the air pollution impacts motorcycle-taxi Grab workers' strategies and income in Southeast Asia (in partnership with Grab Holding Inc.). To appear in CSCW 2024.
- Enhance sensor technology, engage with novel at-risk demographics, and develop comprehensive policy documentation to highlight the impact of urban air pollution in on vulnerable populations in Thailand. Explore potential optimizations, such as adjusting work schedules, while acknowledging existing constraints.
- Collaborate in community outreach, equipment deployment, and troubleshooting on the open-sourced Community Cellular (LTE) Network project to bring affordable high-speed connectivity to lower-income neighborhoods in South Seattle and Tacoma area.
- *mtunzi*, a system for software-defined network access control and captive networking aimed toward the networking needs of small WISPs and community network operators.
- Analyze the impact of COVID-19 on the Community Cellular Networks's internet traffic and transactions in Bokondini, Indonesia. *(ACM COMPASS'21)*

School of Engineering and Technology (UWT)

- Interpret decision making behind Deep Learning models and decompress in order to have them operate in IoT devices efficiently, such as mobiles and tablets, to detect and block Domain Generation Algorithm (DGA) malwares with Infobox company under supervision of Prof. Juhua Hu.

Data Scientist — *October 2023 - Present*

Aeronautical Radio of Thailand at Bangkok Thailand

- Contribute to strategic planning and implementation in the Air Traffic Flow Management (ATFM) team to optimize air traffic flow, ensure a balance between demand and capacity, and aid in reducing pollution emissions and optimizing costs amidst growing traffic.
- Provide strategic advice and planning for the establishment of a Data Innovation Center, guiding the transformation of the company into a data-driven organization.

Research Intern for Aarhus City Lab *May 2022 - July 2022*

DOKK1 at Århus, Denmark

- Applied Data Science practices analyzing the impact of cruise emissions and used Deep Learning for time series forecasting on the air quality of the second largest city of Denmark, Århus.
- This work is a collaboration with the Aarhus City Lab team, ITK department at DOKK1 (Århus, Denmark). A media coverage for the work: itk.aarhus.dk/nyheder/projektnyheder/krydstogtskibe/cruise-ships/. More information, please visit github.com/nussarafin/aarhus-aqi.

Graduate & Undergraduate Teaching Assistant *September 2020 - Present*

Paul G. Allen School of Computer Science & Engineering

- Assist Prof. Jeffrey Heer and Prof. Leilani Battle with lesson plans for the *Data Visualization* class. Instructing the class requires TAs to be proficient in using D3.js, web programming, Tableau, and observable notebooks. Other tasks includes but not limited to holding office hours, instructing small groups of students, and providing feedback/help on assignments for classes of 120 students.

School of Engineering and Technology (UWT)

- Teach materials and construct exercises for Data Structures, Discrete Math, and Object-Oriented Programming classes.

Undergraduate Tutor *September 2019 - February 2020*

Information School at University of Washington

- Teach students one-on-one with more than 200 students especially disadvantaged and limited coding experienced students and work collaboratively with iSchool professors to improve contents for Intro to Data Science, Web development, Databases and Server-Side Development course.

Data Science Intern *July 2018 - August 2018*

Aeronautical Radio of Thailand at Bangkok Thailand

- Collaboratively working on optimizing airspace usage with data scientists and engineers in Air Traffic Flow Management (ATFM) Team to balance the air traffic demand of Thai airspace capacity.
- Analyze, forecast, and visualize the possible delays on each routes on over millions flight data using data mining and visualization skills and various tools including but not limited to Tableau and advanced Excel formulae.
- Successfully able to identify congested routes and the causes of delay, which have been further handled by the team accordingly.

ThaiSA Vice President *June 2018 - June 2019*

Thai Students Association (ThaiSA) at University of Washington

- Organize 12 Thai cultural events with more than a thousand attendees, delegate and follow up undertaken duties along with support about 300 Thai Student community for their cultural and academic adaptation. More information about the events please visit http://tinyurl.com/thaisauw

Projects

mtunzi: Software-defined Network Access Control for Small Networks *GitHub Repository*

Researcher and network engineer *September 2021 - January 2022*

- *mtunzi* is a system for software-defined network access control and captive networking aimed toward the networking needs of small WISPs and community network operators. The system uses Openflow as a communication protocol and freeRADIUS server authentication process, both run on Mininet (i.e. network emulator). The captive portal uses flask application.
- Collaboratively design the flask app portal and software-defined approach to register and authenticate switches, authenticate hosts & users, and dynamically manage hosts & users.

Microsoft Malware Detection for UW Informatics x Microsoft Corp.

Project Leader and Database Analyst *January 2020 - March 2021*

- Lead the team to build normalized database model, drafting the entity relationship diagram (ERD), and investigate the top 5 devices, characteristics that are prone to get infected by analyzing over eight million rows of real data representing the malware-infected devices.
- Collaboratively design normalized and highly optimized database containing only business related to meet the needs using advanced SQL and high-level database management. Microsoft SQL Server is the main software. The data analysis was done in Python.

PathDeck: COVID-19 Health Tracking Application *GitHub Repository*

Full-Stack Mobile Application Developer *June 2020 - August 2020*

- Is an application allows users to track their health, locations, activities, and notify people in contact quickly if they get infected. However, this application can also serve as a note taking or daily planner application. More information about features please visit the GitHub repository.
- Contributed mainly as a full-stack developer together with Kieu Trihn using Android environment, Postgres, Heroku, Figma, SQL, JavaScript and Java. The demo video can be found at youtu.be/6J5nFruHM60

NutriBites: On-Demand Campus Dining Service at DubHacks 2019 *GitHub Repository*

Front-end Developer *October 2019 - October 2019*

- A software prototype for tight-schedule students to pre-order campus nutritious food online. The features include utilizing the calendar API and ML to automatically ordering lunch based on availability, behavioral analysis of orders, and coin-earning system from consuming healthier food or delivering for their schoolmates as an incentive.
- Contributed on the prototype of platform collaboratively from brainstorming ways to differentiate NutriBites from other student-run food services and developed front-end using Bootstrap, HTML, CSS, and JavaScript.

Chicago Crime Data Visualization *GitHub Repository*

Project Leader and Data Visualization developer *June 2019 - August 2019*

- Is a shiny application for interactive data visualization using crime datasets in Chicago over the past 10 years to inform locals and tourists about the locations and areas, crime types, and timeline that crimes were committed.
- Designed and implemented mainly on the interactive heatmap showing crime distribution in different time/area using data exploration and visualization skills in advanced R and HTML/CSS language.

Selected Media Coverage

From Seattle to Aarhus: Investigating how cruise ships affect air quality *August 2022*

itk.aarhus.dk/nyheder/projektnyheder/krydstogtskibe/cruise-ships/

Photo Essay: A view into a Tribal Broadband Bootcamp *March 2022*

muninetworks.org/content/photo-essay-view-tribal-broadband-bootcamp

Courseworks

Data Visualization
Human Computer Interaction (HCI)
Design Methods - User Interface Design
Deep Learning
Machine Learning
Databases & Data Modelling
Computer Networks & Systems
SW Development& QA Techniques
Mobile Application Development

Scholarships

Royal Thai Scholarship *June 2017 - Present*

Funded by Aeronautical Radio of Thailand (AEROTHAI)

- Received a full financial support of $400,000 to study Bachelor's and Master's Degree in the United States.

Long Term Exchange Program (LTEP) Scholarship *September 2012 - July 2013*

Funded by Rotary International District 3350

- Received a scholarship of $65,000 to attend a year-long program studying in Dover Bay Secondary in British Columbia, Canada to learn both academically and culturally.

Honors & Awards

2021	**Annual Dean's list 2019-2021**, University of Washington High-scholarship award	*Seattle, WA*
2016	**Student of The Month as a Communicator**, Student Recognition Ceremony	*New Hampton, NH*
2014	**Gold Medal**, ASEAN Community English Debate Contest	*Chiang Mai, Thailand*
2014	**Gold Medal**, English Skit Competition at 63rd National Student Arts and Crafts Competition	*Phetchabun, Thailand*

Conferences

Grace Hopper Celebration (vGHC) 2021 *September 2021*

vGHC'21 scholarship recipient from Paul G. Allen school

Richard Tapia Celebration of Diversity in Computing (TAPIA) 2021 *September 2021*

TAPIA'21 scholarship recipient from Paul G. Allen school

ACM COMPASS 2021 *June 2021*

Workshop Presenter