

# HYUNSEOK (DANIEL) JANG

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Research Interests: Network Measurement, Wireless and Cellular Communication, Web, IoT

## EDUCATION AND GRANTS

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**Tamayyuz (Excellence) Research Fellowship**  
New York University Abu Dhabi

*September 2023 - August 2024*

**New York University Abu Dhabi**  
BSc Computer Science; Applied Mathematics Minor

*August 2018 - May 2023*

## PREPRINTS

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**Roam Without a Home: Unraveling the Airalo Ecosystem** [[Manuscript](#)]

- HyunSeok Daniel Jang, Matteo Varvello, Andra Lutu, Yasir Zaki
- *To be submitted, MobiSys '25*

**Challenges and Opportunities for Global Cellular Connectivity** [[Manuscript](#)]

- Viktoria Vomhof, HyunSeok Daniel Jang, Matteo Varvello, Stefan Geißler, Yasir Zaki, Tobias Hofffeld, Andra Lutu
- *Under submission, CCR '25*

## RESEARCH EXPERIENCE

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**NYUAD Communication Networks Lab**  
*Research Assistant*

September 2023 - Present  
*Abu Dhabi, UAE*

**Global Cellular Connectivity via Mobile Network Aggregators (MNAs)**

*2 papers under submission*

- Conducted in-depth analysis of Airalo's global network infrastructure, discovering unique roaming topologies and routing inefficiencies through extensive IP-based mapping and traceroute analysis, providing key insights into current IPX Hub Breakout implementations and performance implications.
- Investigated Internet gateway deployment patterns of four MNAs, proposing location-aware allocation strategies to improve geographical granularity and performance in international roaming services.

**Bluetooth Low Energy (BLE) Location-Tracking Systems**

*Paper manuscript in progress, to be submitted for publication in winter 2024*

- Led a large-scale empirical evaluation of major BLE trackers (AirTag, SmartTag, Tile) through controlled experiments and worldwide deployments, assessing accuracy and responsiveness.
- Formulated statistical models of positional error reported by trackers, applying empirical findings to enhance hypothetical cross-platform location tracking.

**Satellite Network for In-Flight WiFi**

*Paper manuscript in progress, to be submitted for publication in spring 2025*

- Executing longitudinal performance measurements of in-flight WiFi solutions using GEO or MEO satellite networks.
- Constructing emulated measurements on LEO satellite networks for aviation, assessing their potential to improve inflight WiFi experience while addressing connectivity challenges such as frequent handovers.

**Amigo: Mobile Network Measurement Testbed**

- Scaled compatibility of an open-source network testbed, enabling automated network diagnostics via varied Android devices, network configurations, and user scenarios.
- Engineered and integrated mobile apps, browser plugins and server infrastructure to collect comparative network metrics (e.g., ping, bandwidth, CDN performance) across diverse network providers.

**Dissemination of Political Content in TikTok**

*Data collection and analysis in progress*

- Developed an automated TikTok user simulation and data collection pipeline on Android to analyze political content delivered through the platform's recommendation algorithm and assess its potential electoral implications.

## CONFERENCES

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**ACM Internet Measurement Conference 2024** [Madrid, Spain]

November 2024

Poster Presentation - "A First Look at IPX Hub Breakout with Airalo"

**ACM Special Interest Group on Data Communication 2024** [Sydney, Australia]

August 2024

Demo Presentation - "Connecting the Unconnected Using FM Radio", "Towards Faster Web for Developing Regions", "Enabling High Bandwidth Applications over 5G Environments"

## RELATED PROFESSIONAL EXPERIENCE

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**FINAKLE**

June - August 2022

*Backend Developer, Intern*

*Seoul, South Korea*

- Modernized legacy infrastructure and designed backend APIs for a FinTech platform
- *Utilized:* Python FastAPI, AWS, MariaDB

**TeamSparta Inc.**

April - November 2021

*Software Engineer, Intern*

*Seoul, South Korea*

- Developed web applications for a large-scale education platform, improving user engagement and system reliability
- *Utilized:* JavaScript, TypeScript, jQuery, React.js, Next.js, Python, Flask, Docker, AWS, MongoDB

## PROJECTS

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**Renta-Cloth**

July 2021 - January 2022

- Built male clothing rental service as a progressive web application (PWA) by using Next.js FE and Node.js BE
- Recipient of honors and funding from Korea University Business School Startup Institute

**The Gazelle**

September - December 2020

*Deputy Web Chief*

- Maintained student publication website with React.js and Node.js to provide reliable service for 1,500 readers

**Print Overflow**

November 2019

- Built an email automation service updating students with their print history to help reduce paper waste on campus
- Received First Place Award at NYUAD Annual Hackathon 2019

## CERTIFICATIONS

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**AWS Certified Solutions Architect - Associate**

July 2023

*Validation Number: ZRNNKBT1X2Q4QGKL*

## SKILLS

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<b>Programming</b>	C, C++, Java, JavaScript, Python, SQL, Scala
<b>Web</b>	HTML, CSS, jQuery, React.js, Node.js, Flask, PHP, FastAPI
<b>Software</b>	Docker, Hadoop, Spark