Jose Paolo Talusan

1700 Pearl Street APT 335, Nashville, TN, USA 37203

+1 (629)-888-3978 | jptalusan@gmail.com

🌐 jptalusan.github.io

WORK EXPERIENCE

Postdoctoral Researcher 5/2022 – Present
Institute for Software Integrated Systems, Vanderbilt University *Nashville, TN, USA*

- Leading multiple graduate students in two projects with industry partners. In charge of guiding their research and facilitating discussions with industry partners as we shape research work into actual usable products for their shareholders.
- Facilitating collaborative negotiations with the local public transit agency, resulting in a data-driven strategy to optimize bus scheduling and substitute bus allocation. Developed machine learning models to predict passenger occupancy for a local transit agency's fleet and worked with students to analyze, process, and further improve upon how agencies collect, process, and visualize their data using algorithms. Developed a bus simulator that can be used to test various policies with as much real-world input as possible.
- Spearheading discussions with an EV manufacturing company regarding potential savings by improving vehicle-to-grid interactions. Leading a team of grad students, a postdoc, and a research engineer in developing algorithms to optimize charging behaviors, creating a simulator to test these policies under real-world requirements, and developing an interface that integrates all these applications in a usable and deployable service for the partners.

Postdoctoral Researcher 9/2020 – 3/2022
Nara Institute of Science & Technology *Nara, Japan*

- Led multiple projects while working under the US-JAPAN Network Opportunity (JUNO-2) project. Developed an anomaly-based incident detection for smart transportation cyber-physical systems on edge devices, which was nominated as the best paper in ICCPS2022.
- Worked on cyber-physical systems, primarily for transportation networks, with an emphasis on the Internet-of-Things (IoT) and distributed computing over low-powered resource-constrained edge devices.
- Guided graduate students in developing applications and services for their own research work.

R&D Engineer & Software Test Engineer 12/2015 – 9/2017

- Maintained, developed, and tested features for Nokia's base stations. Used C/C++ and Java.

Software Developer 11/2014 — 11/2015

- Developed backend applications for local mobile carriers, using primarily C++ and Java.

Software Developer 06/2011 – 06/2013

- Developing new features and implementing bug fixes for Canon's printer systems. Work done primarily in C/C++.

VOLUNTEER EXPERIENCE

Web Chair for ICCPS (2023) 5/2023

- Designing and creating the conference website.

Publicity and PhD forum chair for SMARTCOMP (2023) 3/2023

- Disseminate information and host a session for PhD students.

Program Committee for IEEE ICA (2023)	12/2023
PhD Forum program committee for IEEE Percom (2023)	3/2023
Web Chair for IEEE PerFlow (2022)	5/2022

- Designing and creating the conference website.

EDUCATION

Nara Institute of Science and Technology — Nara, Japan
Ph.D. in Engineering — *12/2020*

- Dissertation title: Design and Implementation of Decentralized Smart City Services on the Edge
- Developed a middleware framework for Internet-of-Things (IoT) for use in resource-constrained edge devices enabling services without the presence of centralized architectures.
- Worked in collaboration with other institutes from both the USA and Japan as part of the JUNO-2 project.

Ateneo de Manila University — Quezon City, Philippines
M.S. in Engineering — *3/2015*

INTERNATIONAL CONFERENCES

Han, C., **Talusan, J. P.**, Freudberg, D., Mukhopadhyay, A., (2024). "Forecasting and Mitigating Disruptions in Public Bus Transit Services". In: *The 23rd International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*.

Bin Zulqarnain, A., Gupta, S., **Talusan, J. P.**, Freudberg, D., (2023). "Addressing APC Data Sparsity in Predicting Occupancy and Delay of Transit Buses: A Multitask Learning Approach". In: *2023 IEEE International Conference on Smart Computing (SMARTCOMP)*, pp. 17–24. DOI: 10.1109/SMARTCOMP58114.2023.00020.

Islam, J., **Talusan, J. P.**, Bhattacharjee, S., Tiausas, F., (2022). "Anomaly based Incident Detection in Large Scale Smart Transportation Systems". In: *2022 ACM/IEEE 13th International Conference on Cyber-Physical Systems (ICCPS)*, pp. 215–224. DOI: 10.1109/ICCPS54341.2022.00026.

Talusan, J. P., Mukhopadhyay, A., Freudberg, D., Dubey, A., (2022). "On Designing Day Ahead and Same Day Ridership Level Prediction Models for City-Scale Transit Networks Using Noisy APC Data". In: *2022 IEEE International Conference on Big Data (Big Data)*, pp. 5598–5606. DOI: 10.1109/BigData55660.2022.10020390.

Tomita, S., **Talusan, J. P.**, Nakamura, Y., Suwa, H., (2022). "FedTour: Participatory Federated Learning of Tourism Object Recognition Models with Minimal Parameter Exchanges between User Devices". In: *2022 IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom Workshops)*, pp. 667–673. DOI: 10.1109/PerComWorkshops53856.2022.9767391.

Nakamura, Y., **Talusan, J. P.**, Mizumoto, T., Suwa, H., (2021). "ProceThings: Data Processing Platform with In-Situ IoT Devices for Smart Community Services". In: *Adjunct Proceedings of the 2021 International Conference on Distributed Computing and Networking*. ICDCN '21. Nara, Japan: Association for Computing Machinery, pp. 116–121. ISBN: 9781450381840. DOI: 10.1145/3427477.3429275. URL: https://doi.org/10.1145/3427477.3429275.

Tiausas, F., **Talusan, J. P.**, Ishimaki, Y., Yamana, H., (2021). "User-centric Distributed Route Planning in Smart Cities based on Multi-objective Optimization". In: *2021 IEEE International Conference on Smart Computing (SMARTCOMP)*, pp. 77–82. DOI: 10.1109/SMARTCOMP52413.2021.00031.

Talusan, J. P., Wilbur, M., Dubey, A., Yasumoto, K., (2020). "On Decentralized Route Planning Using the Road Side Units as Computing Resources". In: *2020 IEEE International Conference on Fog Computing (ICFC)*, pp. 1–8. DOI: 10.1109/ICFC49376.2020.00009.

Wilbur, M., Samal, C., **Talusan, J. P.**, Yasumoto, K., (2020). "Time-dependent Decentralized Routing using Federated Learning". In: *2020 IEEE 23rd International Symposium on Real-Time Distributed Computing (ISORC)*, pp. 56–64. DOI: 10.1109/ISORC49007.2020.00018.

Talusan, J. P. (2019). "Distributed Processing Middleware on Mesh Network for Connectivity Challenged Environments". In: *2019 IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops)*, pp. 457–458. DOI: 10.1109/PERCOMW.2019.8730782.

Talusan, J. P., Tiausas, F., Stirapongsasuti, S., Nakamura, Y., (2019a). "Evaluating Performance of In-Situ Distributed Processing on IoT Devices by Developing a Workspace Context Recognition Service". In: *2019 IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops)*, pp. 633–638. DOI: 10.1109/PERCOMW.2019.8730693.

Talusan, J. P., Tiausas, F., Yasumoto, K., Wilbur, M., (2019b). "Smart Transportation Delay and Resiliency Testbed Based on Information Flow of Things Middleware". In: *2019 IEEE International Conference on Smart Computing (SMARTCOMP)*, pp. 13–18. DOI: 10.1109/SMARTCOMP.2019.00022.

Guico, M. L., Abrajano, G., Domer, P. A., **Talusan, J. P.,** (2018). "Design and Development of a Novel Acoustic Rain Sensor with Automated Telemetry". In: *MATEC Web Conf.* 201, p. 03003. DOI: 10.1051/matecconf/201820103003. URL: https://doi.org/10.1051/matecconf/201820103003.

Nakamura, Y., Umetsu, Y., **Talusan, J. P.**, Yasumoto, K., (2018). "Multi-Stage Activity Inference for Locomotion and Transportation Analytics of Mobile Users". In: *Proceedings of the 2018 ACM International Joint Conference and 2018 International Symposium on Pervasive and Ubiquitous Computing and Wearable Computers.* UbiComp '18. Singapore, Singapore: Association for Computing Machinery, pp. 1579–1588. ISBN: 9781450359665. DOI: 10.1145/3267305.3267526. URL: https://doi.org/10.1145/3267305.3267526.

Talusan, J. P., Nakamura, Y., Mizumoto, T., Yasumoto, K., (2018). "Near Cloud: Low-cost Low-Power Cloud Implementation for Rural Area Connectivity and Data Processing". In: *2018 IEEE 42nd Annual Computer Software and Applications Conference (COMPSAC).* Vol. 02, pp. 622–627. DOI: 10.1109/COMPSAC.2018.10307.

JOURNAL PUBLICATIONS

Islam, M. J., **Talusan, J. P.**, Bhattacharjee, S., Tiausas, F., (June 2023). "Scalable Pythagorean Mean Based Incident Detection in Smart Transportation Systems". In: *ACM Trans. Cyber-Phys. Syst.* Just Accepted. ISSN: 2378-962X. DOI: 10.1145/3603381. URL: https://doi.org/10.1145/3603381.

Tiausas, F., Yasumoto, K., **Talusan, J. P.**, Yamana, H., (June 2023). "HPRoP: Hierarchical Privacy-Preserving Route Planning for Smart Cities". In: *ACM Trans. Cyber-Phys. Syst.* Just Accepted. ISSN: 2378-962X.

Talusan, J. P. V., Wilbur, M., Dubey, A., Yasumoto, K., (Sept. 2020). "Route Planning Through Distributed Computing by Road Side Units". In: *IEEE Access* 8, pp. 176134–176148. DOI: 10.1109/ACCESS.2020.3026677.

Additional Information

Best paper nominee: "Anomaly based Incident Detection in Large Scale Smart Transportation System" in the 13th ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS)
Scholarship awarded: Japanese Government Scholarship (9/2017)

Technical Skills

Languages: Python, C/C++, Bash, Rust
Frameworks: Flask, Dash, Spark
Developer Tools: Git, Docker, Google Cloud Platform, VS Code
Others: Distributed computing, Edge computing, Middleware, Data analysis, Machine learning, Decision-making optimization