Mitsuhiro Odaka – Curriculum Vitae

Work Experience

Nov 2025–Present **Research Associate at National Institute for Environmental Studies (NIES), Social Systems Division, Global Sustainability Integrated Assessment Section**

Overview

TBD

Apr 2024–Oct 2025 **Consultant at a Major Global Consulting Firm (Big 4)**

Overview

Immediately after completing my Ph.D., I joined a Big4 firm to build business acumen and worked as a consultant in Digital Transformation (Emerging Technology; Data & AI). I developed AI- and data-science-based solutions and applied research skills to real-world business challenges.

Responsibilities

DX: Business-strategy support

- Estimated drivers of structural deterioration in public infrastructure using NLP and computer vision to optimize risk management.
- Proposed intervention hypotheses for standing up a CFO function via statistical analysis of enterprise survey data.
- Performed topic classification and analytics of meeting minutes using LLMs.
- Planned and proposed Eco-DRR (ecosystem-based disaster risk reduction), including AI-driven simulations for siting green infrastructure.
- Conducted emerging-technology research (quantum computing):
    - Built longlists/shortlists.
    - Ran statistical analyses of Technology Readiness Levels.
    - Created Sankey (parallel-category) diagram visualizations across elemental technologies × industries × business domains × expected impact.

SX: Sustainability-strategy support

- Performed governance, risk, and compliance (GRC) analysis to enhance corporate value.
    - Conducted code reviews and regression testing.
    - Web-scraped JPX Corporate Governance Reports and Buffett Code stock price data; retrieved and integrated securities reports and other datasets from SQL Server.
    - Designed approaches to estimate financial and non-financial metrics using NLP and generative AI.

AI agents for an advertising agency (IT strategy, architecture, and operations)

- Designed and built a digital-advertising AI agent on Azure and Django for customer analytics, audience selection, clustering & persona analysis, media-plan generation, and automated slide creation (intelligent automation).
- Designed and built a code-analysis AI agent (file/table/function dependency graph; graph-RAG chat).
- Developed technical proof-of-concept demos (multimodal RAG; MCP server).

Apr 2021–Mar 2024 **JSPS Research Fellowship for Young Scientists DC1, Japan Society for the Promotion of Science (JSPS)**

Theme Research on COVID-19 using artificial intelligence technologies

Affiliation National Institute of Informatics & LS2N, École Centrale de Nantes

Overview To further advance network research and address the urgent global challenge of COVID-19, I served for three years as a JSPS research fellow DC1 and as a collaborative researcher in the ROIS Strategic Research Project. I developed foundational technologies for causal network discovery using AI and conducted applied research on COVID-19.

Achievements by the end of the term

• Secured four competitive external grants (one JSPS Fellowship Grant, three ROIS project budgets)

• Produced 23 research outputs (2 peer-reviewed journal papers, 3 peer-reviewed conference papers, 18 conference presentations)

• Awarded Ph.D. in Informatics

Mar 2022–Jun 2022 **Part-Time Teaching Assistant (Enseignant vacataire), École Centrale de Nantes**

Assisted with programming labs for the “Mathématiques” course (Professor Françoise Foucher)

Jan 2020–Mar 2021 **Intellectual Property Hunter (Writer & Editor) Intern, Chizaizukan Inc.**

Achievements

Hunted 72 IP cases (ranked #1 out of ~30 IP hunters as of March 2021).
What is an IP Hunter? (Japanese only, published Jan 6, 2021)
The World of Serious Games (Japanese only, published May 25, 2020)
Seven Outstanding Bachelor Theses (Japanese only, published May 25, 2020)

Feb 2018–Mar 2021 **Research Assistant (Part-Time), National Institute of Informatics**

- Apr 2020–Mar 2021: Research Support, Informatics Principles Division
- Feb 2018–Mar 2020: Research Support, Information Society Correlation Division (Seconded Nov 2018–Jun 2019 to Canon Institute for Global Studies, Macroeconomics Group)

Education

2026(expected) **M.A. in Public Policy**
Degree Awarded By
Jindal School of Government and Public Policy (Supervisor: Prof. Pradeep Guin)
Research Theme
Spatial Targeting of Climate-Responsive Social Protection in Southern Asia: Mapping Climate-Economy-Disease Vulnerability Hotspots and Clarifying Policy Mismatches (TBC)

2024 **Ph.D. in Informatics**
Degree Awarded By
Dual Degree Program Completion
- The Graduate University for Advanced Studies (SOKENDAI) (Supervisor: Prof. Katsumi Inoue, NII) (2019–2024) Learning & Inference Lab
- École Centrale de Nantes (LS2N, Supervisor: Prof. Morgan Magnin) (2021–2024) MéForBio Lab

Focus Integration of deep learning and symbolic reasoning
Research Theme Development of a framework for causal network discovery by integrating observational data and domain knowledge, and its application to global challenges (aligned with JSPS DC1 duties and ROIS Strategic Research Project roles)
Dissertation Title Data-Driven and Knowledge-Based Multiscale Modeling of Viral Dynamics

2021 **M.Sc. in Informatics**
Degree Awarded By The Graduate University for Advanced Studies (awarded upon completion of master's degree qualification examination)
Thesis Title Modeling Viral Dynamics in SARS-CoV-2 Infection Based on Differential Equations and Numerical Analysis

2020 **B.Sc. in Science**
Degree Awarded By National Institution for Academic Degrees and Quality Enhancement of Higher Education
Completed required coursework and a written exam during medical studies to earn a second bachelor's degree.
Thesis Title Visualization and Network Analysis of Global Stock Ownership Big Data

2019 **Bachelor of Medicine**
Degree Awarded By Nagasaki University School of Medicine
Theme 1 Optimization of herd immunity strategies for malaria
Affiliation Institute of Tropical Medicine, Nagasaki University
Overview Developed ODE-based models to simulate infection and vaccination effects under various herd immunity scenarios in developing countries, analyzing the relationship between vaccination coverage and infection prevalence.
Theme 2 Global ownership research
Affiliation National Institute of Informatics
Overview Motivated by interest in network structures underlying disease spread, conducted network analysis on global corporate shareholding data to model the scale of corporate control diffusion and quantitatively analyze China's Belt and Road Initiative.

Competitive External Funding

2022–2024 **Strategic Research Project, Research Organization of Information and Systems (Project No. 2022-SRP-09)**
¥800,000 (FY2022), ¥1,100,000 (FY2023)
"Artificial Intelligence for Uncovering Network Dynamics of SARS-CoV-2 Multiscale Infection Systems"

2021–2024 **JSPS KAKENHI Fellowship (Project Nos. 21J22938 [2021-2022], 22KJ1417 [2023])**
¥2,500,000
"Model-driven Study of Host Cell Multiscale Dynamics in Viral Infection"

2021–2022 **ROIS COVID-19 Research Project**
¥1,000,000
"Multiscale Modeling of Network Dynamics in SARS-CoV-2 infectious systems"

2020–2021 **ROIS COVID-19 Research Project**
¥1,400,000
"Multiscale Quantitative Analysis of SARS-CoV-2 Infection Dynamics"

Awards

2020	**IPSJ 81st Annual Conference Best Paper Award** Mitsuhiro Odaka & Takayuki Mizuno, “Data-driven Study on Chinalization by One Belt One Road Initiative: Network Analysis of Global Stock Ownership Network”
2019	**IPSJ 81st Annual Conference Student Encouragement Award** Same as above

Other Academic Service 1 (Research Collaboration)

2019–2024	Institute of Tropical Medicine, Nagasaki University International Health Division Collaborative Researcher

Other Academic Service 2 (Review Assistance)

2022	Review Assistance: 31st International Joint Conference on Artificial Intelligence (IJCAI)
2020	Review Assistance: The 11th International Conference on Computational Systems-Biology and Bioinformatics (CSBio)

Technical Competencies

Modeling & Simulation
Examples: Differential equation modeling, Sensitivity analysis, Stability analysis, Dynamical system calibration experiments, Building multi-agent systems using artisoc, mathematical optimization (SciPy, GAMS, Pyomo)

Statistical Analysis
Examples: Time series analysis, Causal discovery (DirectLiNGAM), Causal inference (DoWhy, EconML), Network analysis (Cytoscape, Gephi, Tulip)

Machine Learning
Example: Generative adversarial networks (GANs), Sparse regression (PyTorch)

Natural Language Processing
Example: Topic modeling, RAG, Similarity Search (LangChain FAISS)

Image Processing
Examples: Image feature point matching, Segmentation, Pose extraction (Control Net)、LoRA

3D Computer Graphics
Examples: Serious game development with Unity, Generative art using Processing, Video editing with AviUtl, Custom virtual world creation in cluster

Information Retrieval, Database
Examples: Data extraction from databases (SPARQL, SQL), Network analysis using graph database (Neo4j, Cypher), Web scraping and automation, Structural homology search using Matras, Sequence homology search using MEGA6 and ClusterW

Geospatial Information Processing
Examples: Geographical mapping using GeoPandas and QGIS

Earth Observation (EO) data analysis
Examples: Satellite image data collection and processing (Google Earth Engine), Handling of various EO data (ECMWF weather (NetCDF, Xarray), VIIRS night light, MODIS NDVI vegetation distribution)

Large-scale data processing
Examples: Distributed processing (PySpark)

Dashboard Development
Examples: Creating dashboards using BI tools (Tableau, Power BI) and libraries (Streamlit, Gradio, Dash)

Cloud Computing
Examples: Azure (OpenAI Service, AI Language, App Service, AI Search, Cosmos DB)

No-Code & Low-Code Tool Utilization
Examples: Neural Network Console, ComfyUI, Dify

Version Control
Example: Git/GitHub

Proficiency in Programming Languages

Python	Able to cover the full data value chain including strategy formulation, data collection, preprocessing, visualization, analysis, and evaluation. Skilled in integrating with cloud services via APIs and building deep learning models either from scratch or via fine-tuning. Holds Paiza Rank A (Advanced Programmer).
C++	Holds Paiza Rank B (Intermediate Programmer).
C#	Able to independently develop and publish games using Unity.
HTML/CSS/JavaScript	Capable of developing and publishing websites from scratch without using templates.
Google Apps Script	Able to develop and deploy custom Slack apps integrated with Google Sheets.
SQL	Can query necessary data assuming a relational database and infrastructure are already in place.

Qualifications

[1]	2011.9	Standard motor vehicle driver’s license (Currently known as: Semi-mid-sized motor vehicle driver’s license) (Vehicle is limited to 5 ton) (Automatic Transmission (AT) only)

[2]	2012	Microsoft Office Specialist (MOS) in Microsoft Office Word, Excel, PowerPoint
[3]	2013.12	TOEIC 790
[4]	2013.7	APEF Diplome d'Aptitude Pratique au Francais (Niveau 3, Numero de candidat: 421001-00300001)
[5]	2016.5	IELTS Academic Overall Score 6.5
[6]	2016.11	edX Verified Certificate "META101x: Philosophy and Critical Thinking" (Queensland Univ.)
[7]	2016.12	Complexity Explorer Certificate for Introduction to Complexity (Fall 2016, ID: 15073281) (Santa Fe Institute)
[8]	2016.12	edX Verified Certificate "UT.9.10x: Effective Thinking Through Mathematics" (University of Texas, Austin)
[9]	2017.12	Japan Statistical Society Certificate (Grade 2, ID: z7ub-ttss-mu32)
[10]	2017.12	Python Engineer Development Association Python 3 Basic Grammar Certification (ID: 6asg-bw7p-hp34)
[11]	2017.8	The Open University of Japan *OUJ Experts* (Mathematics for social science, ID: 12Z119567 / Computer science basic knowledge, ID: 12Z119568) OUJ Experts certifies that an applicant has systematically studied a certain field of subject by taking specified 10 courses in OUJ.
[12]	2018.12	CG-ARTS Certification Tests: CG engineer test (expert level, ID: 1812300040), Image processing engineer test (basic level, ID: 1813400101)
[13]	2019.11	Japan Deep Learning Association JDLA Deep Learning for GENERAL
[14]	2022.6	FutureLearn Certificate "Artificial Intelligence (AI) for Earth Monitoring" (EUMETSAT and European Centre for Medium-Range Weather Forecasts (ECMWF))
[15]	2022.9	Coursera course certificate "Global Warming II: Create Your Own Models in Python" (The University of Chicago)
[16]	2023.7	Climate Change AI Summer School 2023 Certificate of Attendance (Virtual)
[17]	2023.10	NVIDIA Deep Learning Institute Certificate: Develop, Customize, and Publish in Omniverse With Extensions (ID Number: f5216e5a255d4d1e87e243232e2ae5e1)
[18]	2024.3	AZ-900: Microsoft Azure Fundamentals Certificate
[19]	2024.4	Motivation Manager Basic (accredited by the Motivation Management Association, Japan) Certificate
[20]	2024.7	Duolingo English Test 130 (Advanced: CEFR C1) [Individual Subscores] Speaking 125 Writing 145 Reading 125 Listening 125 [Integrated Subscores] Production 135 Literacy 135 Comprehension 125 Conversation 125
[21]	2024.8	IELTS Overall band score 6.5 Listening 7.0 Reading 7.0 Writing 6.5 Speaking 6.0
[22]	2025.3	Coursera course certificate "Introduction to Project Management" (IBM)
[23]	2025.3	Coursera course certificate "Structured Approach to Problem Solving" (Fractal Analytics)
[24]	2025.3	World Bank Course certificate "Reproducible Research Fundamentals" (The World Bank Group Institute for Economic Development)
[25]	2025.10	Semi-mid-sized motor vehicle driver’s license (Vehicle is limited to 5 ton) (Automatic Transmission (AT) & Manual Transmission (MT))

Completed watchlist (Note to self)

[1]	2023	[YouTube] Houdini Fundamentals
[2]	2024	[Udemy] Unreal Engine5 beginner: Cinematic film making course
[3]	2024	[LinkedIn Learning] Leading Yourself
[4]	2025	[Udemy] [Beginner] Making Animation by Blender 2.8 and making it move by Unity

Experiences

Overseas Clinical Clerkship	One month of experience in international clinical training as a student doctor at the division of infectious diseases of Tan Tock Seng Hospital (via Special Clinical Electives Program by Yong Loo Lin School of Medicine, National University of Singapore, 2017)
Jazz Bar Waiter	JAZZ & BOOZE Milestone (part-time job 2011-2012)
Private teacher (for elementary school kids to high school students)	Ecole Nagasaki (part-time job 2012-2015)
Media artist, Creative coder	Konel Inc. (part-time job 2020-2021)