XIAO PING SONG, PhD

8 years of research experience, 7 years in data science, and 3 years as a project manager. I lead end-to-end delivery for technical projects that develop metrics and predictive software. My research and teaching focus on applied machine learning and geospatial techniques.

My track record includes developing use cases for data products, acquiring exclusive data, building dashboard applications, leading technical workshops, and aligning diverse stakeholders in highly matrixed environments.

CONTACT

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- scholar.google.com

EMPLOYMENT

2021

Postdoctoral Research Fellow
National University of Singapore, Dept. Architecture   📍 Singapore

- Secured a 3-year grant for $1.5 mil
- Assembled and managed a cross-functional team of experts/ government officials to develop sustainability reporting standards across six work streams
- Led team to procure and deploy IoT sensor networks in public housing estates, delivering real-time data with 60% cost savings
- Pioneered new methods to reduce spatial disparities in park access, published in a software journal

2020 | 2022

Postdoctoral Research Fellow
National University of Singapore, Faculty of Science   📍 Singapore

- Developed data pipelines and predictive models to assess the diversity of 1,100 animal species in city planning
- Spearheaded Agile Sprints and client workshops for a data product that delivers biodiversity performance benchmarks, gaining buy-in from senior management
- Secured access to sensitive high-resolution (LiDAR) data and $60,000 funding for satellite images
- Led and trained a team of five to proficiency in coding best practices and GitHub collaboration, resulting in 8x faster development/validation of models

2016 | 2020

PhD Researcher
ETH Zürich, SEC, Future Cities Laboratory   📍 Singapore, Switzerland

- Drove initiatives for data sharing and industry talks, leading to the publication of four research papers in leading global journals
- Showcased research at global conferences (e.g., UK, Japan, Switzerland) and won the Three Minute Thesis competition

🎓 EDUCATION

2020

Ph.D. in Architecture (Urban Planning / Analytics)
National University of Singapore, College of Design and Engineering

- Thesis: Big Data Applications for Urban Greening
- Applied statistical/ML techniques to develop a cost-effective strategy
- for managing trees citywide
- Predicted recreational preferences and crowd behaviour at parks based on social media photos

2016

B.Sc. (Hons) in Life Sciences (Environmental Biology), Minor in Technology Entrepreneurship
National University of Singapore

</> CODE & TOOLS

R / tidyverse / r-spatial / Shiny
Python / numpy / scikit-learn
PyTorch / Tensorflow / Keras
SQL / PostgreSQL / PostGIS
Git
Shell / Bash
RegEx
HTML / CSS
APIs (REST, GraphQL)
AWS (Certified Solutions Architect)
QGIS / ArcGIS / Google Earth Engine
Docker

📈 METHODS & DOMAINS

Metrics & feature engineering
Data visualization (inc. spatial)
Model diagnostics & debugging
Linear & mixed models (inc. GLM)
Decision trees / Ensemble models
Unsupervised learning
Deep learning (ANN, CNN, RNN)
Parallel programming
Remote sensing (satellite / LiDAR)
Image processing (inc. spectral)
IoT / Wireless technologies
Econometrics (e.g., natural capital)
Web scraping / analytics (GA4)
Questionnaire surveys

TEACHING / TRAINING SKILLS

2021 | 2022
Introduction to Git
University workshops on version control and GitHub collaboration
🔗 github.com/xp-song/Intro2R-Git

2019 | 2022
Introduction to R Programming and Statistics
Online and in-person workshops covering a variety of topics in R
🔗 xp-song.github.io/posts/intro2r

2018 | 2020
Analysing Spatial Patterns of the Landscape
Module Lecturer, National University of Singapore. Master of
Landscape Architecture: Urban Greening Technologies & Techniques
🔗 xp-song.github.io/posts/intro2r-spatial

2016 | 2020
Weekly Music Classes
Part-time Educator, My Drum School Pte Ltd. Attained Net Promoter
Score of 75 (top 5%); Best Educator of the Quarter twice in 3 years
🔗 instagram.com/p/BzpCir0HQA-

CERTIFICATIONS

2023
AWS Certified Solutions Architect (SAA-C03)
🔗 MPT23CE271FQQMWQ

2023
Google Project Management: Professional Certificate
🔗 D85BGC9PM8P2

2023
Deep Learning Specialization
DeepLearning.AI
🔗 Y56Z9BDUGTS8

2023
Machine Learning
Stanford University
🔗 4PEUEMGV4CGK

AWARDS

2016
SEC PhD Scholarship (Fully Funded)
Singapore National Research Foundation

2011
Best Full-time National Serviceman
Officer Cadet School (Midshipmen Wing), Singapore Armed Forces

2009
Jacob Ballas Scholar's Award
Perfect score (six distinctions), GCE 'A' Level Examinations

SOFTWARE

📦 **biodivercity**
Assess the spatial distribution of
urban biodiversity between places,
across time, and into the future

📦 **home2park**
Assess the spatial provision of parks
city-wide

📦 **allometree**
Develop allometric equations for the
size and structure of urban trees