

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.

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
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2022

 - Postdoctoral Research Fellow**
National University of Singapore, Dept. Bio. Sciences  Singapore
 - Developed data pipelines and predictive models to assess the diversity of 1,100 animal species in city planning
 - Spearheaded client scoping and training 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
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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

CONTACT

 xpsong.connect@gmail.com

 xp-song.github.io

 linkedin.com/in/xpsong

 github.com/xp-song

 scholar.google.com

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
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2022 • **Introduction to Git**
University workshops on version control and GitHub collaboration
github.com/xp-song/Intro2R-Git
- 2019
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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
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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
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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](https://certificates.aws.amazon.com/certification/verify?certid=MPT23CE271FQQMWQ)
- 2023 • **Google Project Management: Professional Certificate**
[D85BGC9PM8P2](https://certificates.google.com/certificates?id=D85BGC9PM8P2)
- 2023 • **Deep Learning Specialization**
DeepLearning.AI
[Y56Z9BDUGTS8](https://certificates.deeplearning.ai/certificates?id=Y56Z9BDUGTS8)
- 2023 • **Machine Learning**
Stanford University
[4PEUEMGV4CGK](https://certificates.stanford.edu/certificates?id=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

-  **biodiversity**
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