

ANNABELLE XU

Applied Mathematician

CONTACT

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🌐 Annabelle Xu

SKILLS

Theory
Control Theory
Uncertainty Quantification
Bayesian Inference
Inverse Problems
Stochastic Processes
Time Series Analysis
Optimization
Machine Learning
Geotechnical Engineering

Programming
Python
MATLAB
R
React/JavaScript
LaTeX
Git

OTHER

Languages
Mandarin (Mother tongue)
English (Fluent)

REFERENCES

Dr. Sjoerd van Ballegooy
svanballegooy@infinitystudio.ai

Professor Jari Kaipio
jari.kaipio@uef.fi

Professor Tom ter Elst
t.terelst@auckland.ac.nz

Dr. Ruanui Nicholson
ruanui.nicholson@auckland.ac.nz

Professor Hinke Osinga
h.m.osinga@auckland.ac.nz

PROJECTS

Geotechnical Engineering

📅 06/2023 - Current 📍 INFINITYSTUDIO.AI

- **Liquefaction Risk Calculator:**
Authored a deterministic system that calculates the risk of liquefaction in a given area. Also developed a probabilistic model that extends calculations to account for uncertainties in the input parameters.
- **Probabilistic Pile Behaviour Model:**
Developed software that offers a probabilistic approach to analyzing pile foundation behavior, accounting for uncertainties in soil properties and loads. Also, assisted in the design of the user interface.
- **Geotechnical Python Library:**
Developed a Python library that offers a powerful set of tools for analyzing soil mechanics, foundation design, and slope stability.

Optimal Stochastic Control of Artificial Pancreas

📅 05/2018 - 12/2022 📍 The University of Auckland

📄 Thesis

An Artificial Pancreas (AP) is a system capable of automating glucose regulation. In my thesis, we adopted a statistical viewpoint of the state estimation procedure required by model predictive control in order to account for modelling errors in existing AP algorithms.

Dynamic Analysis of Structures

📅 03/2017 - 10/2017 📍 The University of Auckland

📄 A new approach to modelling structural responses to earthquakes

📄 Shake table simulation of dynamic forces of a structure

In my dissertation, we investigated possible adjustments to the experienced force based on the resonance frequency and the total power of the signal.

WORK HISTORY

📅 06/2023 - Current
📍 INFINITYSTUDIO.AI,
Auckland, New Zealand

Data Scientist / Product Developer

📅 09/2016 - 02/2017
📍 The University of Auckland,
Auckland, New Zealand

Research Intern

EDUCATION

📅 05/2018 - 12/2022
🏠 The University of Auckland

Ph.D. in Applied Mathematics

Supervisors: Professor Jari Kaipio, Professor Tom ter Elst,
Dr. Ruanui Nicholson

📅 03/2014 - 10/2017
🏠 The University of Auckland
🏆 First Class Honours

B.Sc. in Applied Mathematics

Supervisor: Professor Hinke Osinga

AWARDS

2018 • The University of Auckland Doctoral Scholarship

2017 • First in Course Award (Maths 769 - Stochastic Differential Equations)

2017 • First in Course Award (Maths 762 - Nonlinear Partial Differential Equations)

2016 • Summer Research Scholarship