

Yin Jeh Ngui (Jason)

yinjeh.ngui@gmail.com • +886 0936 266 696

<https://www.linkedin.com/in/yjngui/>

<https://flyercarol.github.io/>

Postdoctoral researcher with a PhD in Civil Engineering and emphasis in Engineering Geophysics and Geotechnical Engineering. Over 7 years of professional experience in near-surface geophysical survey, real-time monitoring of slope displacement and suspended sediment transportation with time-domain reflectometry (TDR), TDR dielectric spectroscopy, and hardware/software interfacing. Published 8 SCI-indexed papers with a pending US/TW patent. Actively integrating Internet-of-Things (IoT) and machine learning in ongoing projects.

Highlights

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- Geophysical survey professional
 - Experienced maker in Raspberry Pi and Arduino
 - Programming fluency (Python, MATLAB, C++)
 - Real-time remote monitoring with predictive maintenance
 - Receptive, multitasking, detail-oriented and high mobility
 - Full-stack IoT researcher/developer

Work Experience

Postdoctoral Researcher

Oct 2019 – Present

Disaster Prevention and Water Environment Research Centre, NYCU, Taiwan

- Lead over 30 near-surface geophysical surveys (TDR, surface seismic, ERT, borehole televiewer, and suspension P-S logging) in slope, dam and reservoir, LNG storage, nuclear power plant, airstrip, and contaminated site.
- Deploy 15 slope monitoring stations and 10 reservoir SSC monitoring stations, based on low-powered Raspberry Pi SBC, TDR device, and in-house IoT modules (e.g. remote relay, power monitoring...).
- Develop automated monitoring software GUI with Python and Kivy.
- Develop full-stack IoT with Node-RED, MQTT, Python, nginx, headless Linux, Arduino and Raspberry Pi.
- Published 4 SCI-indexed, 4 EI-indexed and 6 conference papers over the past 3 years.
- Co-advised 2 doctoral and 8 master's students from Geo-Imaging and Geo-Nerve research group.

Projects

Integrated slope monitoring program

2016 – Present

Design and supervision: 15 borehole installations using TDR cable and inclinometer casing

Development, deployment, and optimization: Real-time displacement monitoring using TDR and IoT devices

Micro-hydropower based renewable energy system performance assessment

2020 – Present

Design and deployment: Real-time IoT logger for energy generation, water level, and flow velocity

Advanced time-domain reflectometry (TDR) dielectric spectroscopy

2014 – Present

Research and deployment: Suspended sediment concentration (SSC) monitoring for 16 reservoir stations and 2 offshore stations

Planning and development: Contaminated soils dielectric spectroscopy, soil moisture content and density estimation

Multichannel analysis of surface waves (MASW) seismic survey

2019 – Present

Planning and execution: Risk assessment and dam safety inspection for Hushan Reservoir

Analysis: Shear-wave velocity (layered V_s and V_{s30}) inversion, dam structure assessment

Electrical resistivity tomography/imaging (ERT/ERI)

2016 – Present

Planning and execution: Site investigation in contaminated sites and slopes

Analysis: Anomaly delineation, time-lapse inversion

In-situ borehole geophysics projects

2015 – Present

Planning and execution: Geotechnical investigation using e-logging, suspension PS-logging, borehole optical and acoustic televiewer

Education

PhD in Civil Engineering | Emphasis in Geophysics and Geotechnical Engineering

Sep 2014 – Jun 2019

National Chiao Tung University

Taiwan

Dissertation: Advanced time domain reflectometry analyses for flexible dielectric spectroscopy

BEng (Hons) in Civil Engineering

Sep 2010 – Jun 2013

The Hong Kong Polytechnic University

Hong Kong

Skills

Programming : Python (Tensorflow, Numpy, Scipy, Pandas, Kivy), Matlab, Arduino C++, Node-RED, MQTT, SQLite, nginx, Maple, Mathematica, IBM SPSS

Geotechnical : RGLDip, DIPS, Slope2000, PLATE, ETABS, Microsoft Project

CAE/CAD/GIS : Ansys, AutoCAD, MicroStation, Sketchup, Google Earth Pro, ArcGIS, Tecplot, Surfer, Grapher

Languages : Mandarin Chinese (Native), English (Fluent, IELTS 8.0), Malay (Fluent), Cantonese (Fluent)

PCB layout : KICAD, easyEDA

AIoT : Software-hardware integration (Raspberry Pi, Jetson Nano, Arduino, Espressif, STM32), LPWAN wireless sensor network (LoRa, NB-IoT), Edge AI