Yi-Chun Wang

About

Yi-Chun Wang currently is an Oxford-based Research Scientist. She specializes in multi-parametric MRI, medical physics oncology, technical writing, and Bayesian networks.

Contact

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Education

- University of Oxford
  DPhil Engineering Science Oct 2022 – Present

- University of Oxford, **Merit**
  MSc Radiation Biology 2018~2019

  - Dissertation: Dosimetric Differences Between margin-based and Minimax Optimisation VMAT plans in NSCLC
  - Written Essay: How can tumour vasculature influence the response to radiotherapy

- I-Shou University, **GPA 4.0**
  BSc Medical Imaging and Radiology Sciences 2014~2018

  - Dissertation: Three-Dimensional Conformal Radiotherapy Treatment Planning for NPC, Prostate and Breast Cancers
  - Research Project: Comparisons of Blood Condition of Common Carotid Artery Before and After Exercise with Sonosite Ultrasound

Employment Experiences

Biomarker Scientisti Perspectum, Apr 2023-Present

- Responsible for implementing Bayesian networks in liver cancer clinical decision making
- Presented at two international conferences APASL 2023, ISMRM 2023

Imaging Applicaitons Scientist Perspectum Ltd, Feb 2022-Apr 2023

- Presented at ISMRM condference 2022
- Scaled documentation production by by implementing structure-based authoring and single-source publishing
- Produced 150+ image acquisition manuals for trials run by **pharmaceutical companies including Akero, Eli Lilly, Bio89, Fractyl and Jassen**
- Gained **FDA approval** with systematic literature review on quantitative liver MRI health technology

Imaging Applications Associate Perspectum Ltd, Jan 2020-Feb 2022

- Developed pipeline for patient information de-identification with softwares: DicomClearnerTM, OsiriX, and Horos

- Acquired quantitative MR images for long Covid-19 patients in **clinical trial**: CoverScan (Identifier: NCT04369807)
- Enhance **DBS** checked

Clinical Intern Radiographer National Taiwan University Hospital 2017-2018

- Achieved **1st Prize out of 1800 candidates** during 2018 Radiographer Certificate Exam
- **Elected as the trainee representative** in NTUH annual assessment 2018
- Completed rotation in the departments of Diagnostic Imaging(4 Months), Nuclear Medicine(2 Months), and Radiotherapy(2 Months)
- Submitted 3 clinical case studies on imaging modalities including linear accelerator, mammography and ultrasound

Research and Teaching Assistant, Medical Physics Lab, I-Shou University 2015-2017

- Responsible for demonstrating at dose calculation experiments; producing experimental protocols
- Financed laboratory research grant by **liaising** with the Ministry of Educational and relevant school authorities

Research Experiences

Bayesian Network Informed Key Factors for Liver Regeneration (3 months)

- Motivation: Currently there is no effective way to identify which factor drives liver regeneration after surgery and the variability of regenerated liver is volume huge between cases.
- Result: This work used Bayesian network to produce a conditional probability graph that demonstrates the key factor for liver regeneration is post-operative liver iron concentration. This work is **accepted by APASL 2023 conference**

Bayesian Network Reveal the Interplay Between Quantitative Liver MRI Metrics (6 months)

- Motivation: Identifying the causal relationships and confounding factors between MRI metrics is cruicial for accurate liver health assessment.
- Result: This work generated 48 Bayesian networks and proven causal reationship from PDFF to cT1 and Volume which was backed up by literatures. The confounding role of PDFF was also identified by this project. This work is **accepted by ISMRM 2023 conference**.

LiverMultiScan Clinical Systematic Literature Review (4 months)

- Motivation: To provide evidence of medical device clinical utility and its developement with Japan PDMA and FDA submission.
- Result: In this project, I created a software tool to drastically reduce the time for writing regulatory systematic literature reviews and supported the company gained FDA clearnance in August 2022. (This tool is now formally incorporated into the compamny's operation repositories for continous usage)

Measuring the Impact of Pineapple Juice on Quantitative Liver MRI Metrics (5 months)

- Motivation: To see if introducing pineapple juice as a contrast agent will introduce bias on quantitative MRI reporting for liver metrics.
- Result: The results proved that pineapple juice does not introduce noticeable bias towards liver MR metrics. This work is **presented in ISMRM 2022 conference**.
- Skill: implemented Python libraries:`os`, `pdfplumber` to conduct data cleaning and organising; `Scipy` to perform statistical analysis, sensitivity & specificity analysis; `matplotlib` and `pandas` for result visualisation

[Dosimetric Differences Between Margin-based and Minimax Optimisation VMAT Plans for NSCLC (5 months)](#)

- Motivation: To compare radiotherapy treatment efficacy between two different dose optimisation techniques.
- Result: this work proposed a novel treatment planning concept that potentially reduces the side effect of radiotherapy. This work was also **accepted for PTCOG 2020 conference poster presentation**.
- Skill: visualized ionising radiation dose data to show tumour coverage with `Raystation 7`, `Python Pandas`, `Numpy`

[Comparisons of Blood flow Conditions of Carotid Artery Before and After Exercise (3 months)](#)

- Motivation: To compare the blood flow condition differences with/without high intensity interval training.
- Result: The results showed systematically increased flow velocity and decreased blood viscosity potentially indicated the benefit of short but intense exercise on a person's circulation system.
- Skill: implemented operation of portable `Sonosite Ultrasound` device

Publications

- Bayesian Network Reveal the Interplay of Quantitative Liver MRI Metric, ISMRM 2023 Conference Proceeding
- Bayesian Network Inform Key Factors for Liver Regeneration, APASL 2023 Conference Proceeding

Programming Experiences

[THAT GIRL's Personal Finance App, June 2023](#)

- Collaborated with fellow trainee developers to design a user-friendly Flask app that allows users to budget for savings, calculate fix-term interest returns, and overview investment portfolio.
- Implemented **Alpha Vantage API**, unit testing, OOP, architecture design and databases
- [Project presentation coming soon](#)

[SQL Project, Oxford cafes, Dec 2022](#)

- A SQL database for all Oxford independent coffee shops. Users can run query to understand coffee item price and how many charging port in selected cafe.
- Implemented `ER Diagram`, SQL query
- [Project presentation](#)

[Reference Generator App, Nov 2022](#)

- A Python GUI app which **automates the manual workflow** of copy & paste publiucation information from Excel to Word doc, filter records for audiences, and apply branded styles on the output material.
- Implemented `wxPython`, `Python-docx`
- Available by request

[Paligo Renamer Tool, Aug 2022](#)

- A Python CLI tool which helps change file names that complies with the company's file naming convention. This **automates the workflow of download → unzip → rename multiple files into one command line run**.
- Implemented `zipfile`, `PyPDF2`, `shutil`
- Available by request

[SLR Table Production Tool, Feb 2022](#)

- A samll Python CLI tool which reduces the time for **standardising** table formating when writing regulatory systematic literature reviews.

- Implemented `pandas`, Bitbucket collaboration
- Available by request

[TechLab Chariteer Project Oct 2021 - Feb 2022](#)

- Collaborated with fellow trainee developers to design a platform that matches talented volunteers with charities to **maximise social impact**
- Responsible for project management with [GitHub Projects](#) and data science implementation
- Available at [Medium Post](#)

[Pineapple Juice Project, May 2021 - Nov 2021](#)

- Statistical analysis practices on paired T test, Wilcoxon test and data visualisation to support science communication.
- Implemented `os`, `pdfplumber`, `Scipy`, `matplotlib`, `pandas`
- This work is **accepted and presented in ISMRM 2022 conference**
- Implemented `os`, `pdfplumber` to organise conduct data cleaning and organising
- Implemented `Scipy` to perform statistical analysis, sensitivity & specificity analysis
- Implemented `matplotlib` and `pandas` for result data visualisation
- Available at [ISMRM Member Portal](#)

[fYnanCe Project, Dec 2020 - Apr 2021](#)

- A personal finance GUI app used to extract information from Payslip, NI contribution, and bank transactions to support perfonal budgeting.
- Implemented `regex`, `Numpy`, `Tkinter`, `matplotlib`
- Implemented `regular expression` to extract and organise data from payslip files
- Implemented `Numpy` and `Pandas` to analyse and visualise expense data in csv format
- Implemented `Tkinter` to create an app that wrap both above functions
- Implemented `matplotlib` to present financial data
- Available at [Demo videos](#)

Skills & Techniques

Programming

- `Python`, `R`, `VS Code`, `SQL` → Software engineering and data science
- `Markdown`, HTML, `Pandoc` → Software documentation

Communication

- `Paligo` → Technical writing & single-source publishing
- `Figma` → Graphic design for healthcare implementations
- `Notion`, `GitHub` → Project Management & Programming

Medical Devices:

- Siemens Area 1.5T MRI → Quantitative MR acquisition on whole body
- Sonosite Ultrasound → Circulation functional test on carotid arteries
- RayResearch RayStation7 → Radiotherapy treatment planning on lung cancer
- DicomClearnerTM, OsiriX, Horos → Patient information de-identification

Certificate & Achievement

- June 2023 Certified with micro Software Degree, Code First Girls

- Feb 2022 Certified with Intro to Web Developmentn, Code First Girls
- Dec 2022 Certified with Developing SQL Data Model, Code First Girls
- Feb 2022 Digital Shaper Certificate, TechLab London
- Jul 2021 HTML Essential Training, LinkedIn Learning
- Mar 2021 Python Data Structure, Coursera
- Mar 2021 GDPR Awareness, Flexebee CPD Accredited
- Mar 2021 Duty OF Candour, Flexebee CPD Accredited
- Mar 2021 Safeguarding Children Awareness, Flexebee CPD Accredited
- Mar 2021 Safegurading Adult Awareness, Flexebee CPD Accredited
- Mar 2021 DIabetes Awareness, Flexebee CPD Accredited
- Mar 2021 Information Governance Awareness, Flexebee CPD Accredited
- Mar 2021 Lone Working Awareness, Flexebee CPD Accredited
- Mar 2021 Fall Prevention Awareness, Flexebee CPD Accredited
- Mar 2021 Fire Safety Awareness, Flexebee CPD Accredited
- Mar 2021 Mental Health Awareness, Flexebee CPD Accredited
- Mar 2021 Age Verification Awareness, Flexebee CPD Accredited
- Mar 2021 Health and Safety Awareness, Flexebee CPD Accredited
- Mar 2021 Manual Handling of Inanimate Object Awareness, Flexebee CPD Accredited
- Mar 2021 Risk Assessment Awareness, Flexebee CPD Accredited
- Mar 2021 Equality and Diversity, Flexebee CPD Accredited
- Mar 2021 Emergency First Aid Awareness, Flexebee CPD Accredited
- Mar 2021 Infection Control Advanced, Flexebee CPD Accredited
- Mar 2021 Coronavirus Awareness anf Infection Control, Flexebee CPD Accredited
- Mar 2021 Moving and Handling of People Awareness, Flexebee CPD Accredited
- Feb 2021 Standard and Enhenced DBS Background Checked, Disclosure and Baring Service
- Nov 2020 Completion of MRI Operation Training, Perspectum Ltd
- Oct 2020 Programming for Everybody, Coursera
- Mar 2020 Good Clinical Practice (GCP) Training, Perspectum Ltd
- Feb 2020 Security Awareness, CybSafe
- Aug 2019 Statistics and Python Essentials, LinkedIn Learning
- Jan 2019 Research Skills Training Certificate for MPLS Division, University of Oxford
- Aug 2018 Medical Radiation Technologist Certificate, Ministry of Health and Welfare of the Republic of China (Taiwan)

Languages

- **Mandarin Chinese** Native Proficiency
- **English** Advance Proficiency (studied and worked in Oxford UK since Sep 2018)

Outreach Experiences

Oxford University Dance Society Secretary March 2023 - Present - Generating Newsletter for society's communication to the wider dance community - Coordinating with dance teachers and committee to determine and update timetable - In charge of posting and advertising on Facebook

Hosted Scientific talk: Alaa Suliman 21 Nov 2022 - Hosted a talk: novel MRI imaging techniques to study the glymphatic system and AQP4 water channels - Support scientific knowledge exchange

Volunteer at Oxford Hub - OxUnboxed Plastic Reduction Program Jan 2020 - March 2020

- Helped people **reduce plastic packaging** by volunteering at a refill shop that sells dry goods

Event Coordinator at Oxford Notion Meetup Group - Get Things Done Workshop Feb 2020

- Hosted and moderated Oxford Notion Meetup Group to help Oxford researchers increase work/life productivity

Chief Event Coordinator Street Dance Society Sep 2015 - Sep 2016

- Collaborated with the committee to **Liaise with University Clubs Office with sponsorship proposal** for financing end of term dance festival, ISUNION

Event Coordinator at Alan Turning Institute London Oct 2019

- Coordinated a talk on entrepreneurship and RnD experience for Joe Yeh MD (CEO of aetherAI). Talk title: "Advancing Pathology Through AI-Powered Digital Workflow"

Public Engagement Researcher at Oxford Oncology Open Day Apr 2019

- Engaged 60 A-Level students by chocolate-radiograph matching activity and in turn explained medical physics research principles effectively

Volunteer at EDA Hospital & Kaohsiung Armed Forced General Hospital - Participated in charity services, fund raising, and direction guiding to visitors