

ED BARRY

@ ed.barry@netc.fr

☎ 0481 320 570

📍 Brisbane, Aus

in edmbarry

🌐 edmbarry

📖 Publications

Chemical and computational engineer with expertise in process modelling, data science and engineering, scientific computing, high performance computing, and machine learning.

EXPERIENCE

Computational Modeller

Advanced Water Management Centre Trojan Technologies

📅 Apr 2015 – present

📍 Brisbane, AUS & London, CAN

- Developed open source pde models (e.g.,...) to simulate fluids and biochemistry and replace prototyping before scaling up bioreactors facility [sell pde, differential equation...]
- Improved models' accuracy by up to 30% compared to standard approaches.
- Deployed models using Linux containers on high performance computing infrastructure. start with deployed ...
- Post-processed data-rich simulation results for 8 papers, technical reports and showcased at 3 conferences.
- Developed scientific libraries on c++ for coupling radiation to biology to model photosynthesis [novel physical phenomena] at Trojan Technologies in London, Canada.

Software Instructor

The Carpentries Organization

📅 Apr 2018 – present

📍 Worldwide

- Designed and taught computational thinking, data analysis and software techniques to industry professionals.
- Improved [by how much] my workflow efficiency and saw improvements in course attendees. received feedback from attendees on their workflow improvement. — idea: you impacted change in their workflow
- Taught Python for data science, shell for automation, and Git for version control. [maybe Point 1 and 2 together]

Research Scientist

Advanced Water Management Centre

📅 Nov 2019 – Mar 2020

📍 Brisbane, AUS

- Designed and conducted experiments on a novel glass recycling process to follow the chemical release...
- Developed novel analysis technique improving waiting times for results from days to minutes. [using novel too much/maybe try to find another word for developed]
- Analysed experimental results using multivariate statistics tools (linear and non-linear regression, anova, bayesian stats, mcmc) and estimated kinetic and operating parameters.

Scientific Officer

Queensland Department of Environment and Science

📅 Apr 2019 – Sep 2020

📍 Brisbane, AUS

- Prepared a report into the state of leading wastewater treatment practice in the Great Barrier Reef catchment.
- Conducted interviews, and analysed monitoring and survey data to gain qualitative and quantitative insights.
- Recommended operation practices across a range of treatment plant sizes with a view to minimise nutrient discharge into the Great Barrier Reef.

EDUCATION

PhD in Chemical Engineering

University of Queensland

📅 Apr 2015 – Nov 2019

Title: *Distributed parameter modelling of phototrophic bioreactor systems.*

- Developed modelling framework to couple biochemical processes, fluid flows and electromagnetic radiation.
- Modelled the growth of bacteria used in biotechnology [emphasise why it is important] by taking into account biochemical processes, fluid flows and electromagnetic radiations in bioreactors
- Demonstrated overestimated bioreactor performance in 0- and 1-D modelling approximations.
- Details about the model on the pde and also on the analysis (statistics)
- Demonstrated that 0- and 1-D modelling approx lead to overestimation of bioreactors performances
- Corrected performance estimates/approximations using 2- and 3-D modelling taking into account spatial effects
- Showed that 2- and 3-D modelling provided better approximations of performance.
- Published in *Water Research* and project was presented in Canada, Cuba and Switzerland.

BE in Chemical Engineering (Hons)

University of Queensland

📅 Mar 2009 – Nov 2014

- Studied a diverse range of general engineering courses during an exchange programme at École Centrale Paris.

COMPUTING SKILLS

Python, Julia, Matlab

MS Office

Linux, Unix, Containers

Latex, Markdown

Git, SQL

PyTorch, Tensorflow

R, C++, Fortran, Rust





TECHNICAL SKILLS

Differential Equations

Laboratory Research Assistant

Advanced Water Management Centre

 Nov 2013 – Apr 2015

 Brisbane, AUS

- Operated laboratory- and pilot-scale bioreactors.
 - Designed, ran and carried out chemical analysis on experiments. [expand on what experiments mean, analysis]
-

CERTIFICATES

Epidemics - the Dynamics of Infectious Diseases

Penn State University

📅 Mar 2020

📍 Online (Coursera)

Julia Scientific Programming

University of Cape Town

📅 Mar 2020

📍 Online (Coursera)

Machine Learning with Python

IBM

📅 Mar 2020

📍 Online (Coursera)

TEACHING & SUPERVISION

Research Supervisor

Advanced Water Management Centre

📅 Nov 2019 – Mar 2020

📍 Brisbane, AUS

- Supervised and mentored Master's student for their summer research project.
- Initiated student on experimental design, laboratory techniques and safety, chemical analysis and statistical analysis.

Lecturer - Wastewater Modelling and Control

UQ Chemical Engineering

📅 Jun 2019 – Nov 2019

📍 Brisbane, AUS

- Coordinated course on principles of biological wastewater treatment, common industry models, numerical methods, uncertainty analysis and propagation, continuous and discrete control strategies, and scientific computing.

Guest Speaker

UQ Chemical Engineering

📅 Jun 2019 – Nov 2019

📍 Brisbane, AUS

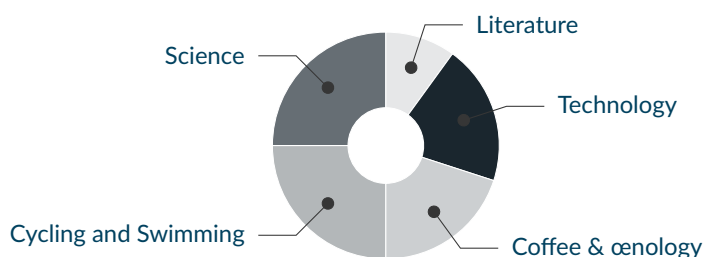
- Delivered lecture and workshop on analytical and numerical propagation of uncertainty in models.
- Ran workshop on modelling and data science workflows using RStudio, Jupyter notebooks, and git.

AWARDS

Sporting

2019 Australian Champion,
Underwater Rugby
2003-2007 Australian Medallist,
Swimming

INTERESTS



VOLUNTEERING

Rugby Coaching

Anglican Church Grammar School

📅 Apr 2018 – Sep 2019

- Coached the U13 C and D teams.
- Ran twice-weekly training sessions and Saturday game days.

Laboratory coordinator

Advanced Water Management Centre

📅 Feb 2014 – May 2018

- Maintained good workplace health and safety culture.
- Managed stocks of consumables and supplies.
- Organised maintenance and cleaning schedules.

SOFT SKILLS

Learning Potential

Team Worker

Responsibility

Work Ethic

Professionalism

Vim Master

LANGUAGES

English

French

German



REFERENCES

Prof. Damien Batstone

Advanced Water Management Centre
d.batstone@awmc.uq.edu.au
(07) 3365 4730

Dr. Gilda Carvalho

Senior Lecturer
Advanced Water Management Centre
g.carvalho@awmc.uq.edu.au
(07) 3365 3215

Asst Prof. Christopher DeGroot

Mechanical and Materials Engineering
Western University
London, N6A 3K7, ON, Canada
cdegroo5@uwo.ca
(+1) 519 661 2111 ext. 84455