ED BARRY

@ ed.barry@netc.fr   ☎ 0481 320 570   ⚲ Brisbane, Aus   in edmbarry   ⌗ edmbarry   🎓 Publications

Adaptable chemical and computational engineer with expertise in process modelling, data science and engineering, scientific computing, high performance computing, laboratory skills, and machine learning.

EXPERIENCE

Computational Modeller
Advanced Water Management Centre

📅 Apr 2015 – present   ⚲ Brisbane, AUS & London, CAN

- Developed open source models to simulate fluids and biochemistry.
- Improved models' accuracy by up to 30% compared to standard approaches.
- Maintained models using Linux containers for deployment on high performance computing infrastructure.
- Post-processed data-rich simulation results for papers, reports and presentations.
- Developed scientific libraries for novel physical phenomena at Trojan Technologies in London, Canada.

Software Instructor
The Carpentries Organization

📅 Apr 2018 – present   ⚲ Worldwide

- Taught computational thinking, data analysis and software techniques to industrial professionals.
- Improved my workflow efficiency and saw improvements in course attendees.
- Taught Python for data science, shell for automation, and Git for version control.

Research Scientist
Advanced Water Management Centre

📅 Nov 2019 – Mar 2020   ⚲ Brisbane, AUS

- Designed and ran experiments on a novel glass recycling process.
- Developed novel analysis technique based on coffee science. Improved waiting times for results from days to minutes.
- Analysed experimental results and determined 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.

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.

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.
- Demonstrated overestimated bioreactor performance in 0- and 1-D modelling approximations.
- 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, Spark	●●●○○
C, C++, Rust	●●●○○
R, Fortran	●●○○○

TECHNICAL SKILLS

Differential Equations

Computational Modelling   Simulation

Deep Learning   Regression

Classification   Bayesian Inference

Time Series   Probabilistic Programming

Markov Chain Monte Carlo

Data Wrangling

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 AND SUPERVISION

Research Supervisor
Advanced Water Management Centre
📅 Nov 2019 – Mar 2020 📍 Brisbane, AUS

- Supervised Master's student for their summer research project.
- Worked with 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

- Introduced students to 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
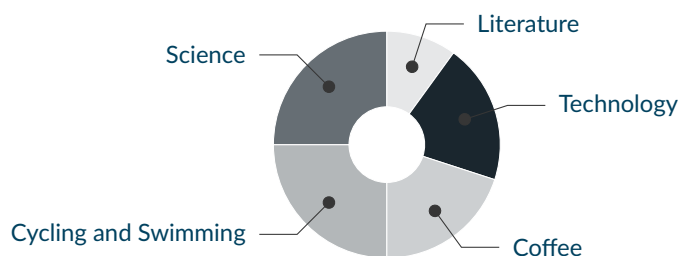📅 Jun 2019 – Nov 2019 📍 Brisbane, AUS

- 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

LANGUAGES

English	●●●●●
French	●●●●●
German	●●●○○

REFERENCES

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