



# YI-LING HWONG 方奕羚

*Data Scientist and Communication Professional*

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## PROFILE

Engineer and communication professional passionate about leveraging the power of **data science and digital technologies** to advance environmental and related causes. Experienced researcher with extensive **international experience** working in multi-disciplinary teams. Currently on course to complete a PhD in **machine learning** and **science communication**. Previously an engineer for the CMS detector of the Large Hadron Collider experiment at **CERN**.

## PROFESSIONAL EXPERIENCE

### PhD Researcher, University of New South Wales

*Sydney, Australia • Jun 2015 – current (expected completion: Aug 2018)*

- Research topic: A study of the processes & outcomes of social media science communication using machine learning
- Develop supervised learning and unsupervised learning methods to examine the properties associated with engagement and trust
- Skills applied: big data extraction (APIs), data engineering, Python coding, NLP, psycholinguistic analysis
- Github: <https://github.com/yiling-hwong/astro-ml>

### Research assistant, Project AGI

*Sydney, Australia • Jul 2017 – February 2018*

- Research techniques related to the development of Artificial General Intelligence (AGI) – unsupervised learning, reinforcement learning, Spike-Timing Dependent Plasticity methods, etc.
- Conceptualise and write articles related to the state of the art of AGI (Medium profile: <https://medium.com/@yilinghwong>)

### Educator, ThinkSpace at Powerhouse Museum

*Sydney, Australia • Jan 2016 – February 2018*

- Teach computer programming (Python, C#), game design (Unity, Minecraft) and physical computing (Arduino, Raspberry Pi) to kids between the ages of 7 and 12

### Communication Officer, Evolve Housing (Non-profit)

*Sydney, Australia • Aug 2014 – May 2015*

- Manage company digital presence (web and social media)
- Inform company communication strategy using data analytics

### Digital Communication Officer, Doctors Without Borders

*Geneva, Switzerland • Jun 2012 – Apr 2014*

- Technical lead for website migration and redesign project
- Website visitors increased by over 60% after relaunch.
- Administer CMS platform built on Drupal multisite installation

## SPECIALTIES

- Machine learning
- Artificial Intelligence
- Natural language processing
- Data engineering
- Statistical modelling
- Communication strategies

## EDUCATION

### Master of Engineering, M.Eng in Power Engineering

*University of Applied Sciences  
Karlsruhe, Germany*

- Final grade: 1.4  
(equivalent to Australian High Distinction)
- Graduated 2<sup>nd</sup> in cohort

## SKILLS

**Coding languages:** Python, R, HTML, CSS

**Data science:** Scikit-learn, Weka, MatLab, NLTK

**Content Management Systems:** Drupal, Wordpress

**Database:** MySQL, MongoDB

**OS:** Windows, Linux, Mac

**Version Control:** SVN, Git

**Project Management (SaaS):** JIRA, Basecamp, Freedcamp

**Others:** MS Office Suite, Adobe Photoshop, Adobe InDesign

## Science Communicator, CERN (European Organisation for Nuclear Research)

Geneva, Switzerland • May 2011 – May 2012

- Produce content for lay-consumption on CERN public websites
- Website design and management (Drupal)

## Data Acquisition Engineer, CERN

Geneva, Switzerland • Dec 2008 – May 2011

- Marie Curie Fellowship Program funded by the European Commission
- Develop an Analysis Toolkit of Finite State Machines for the CMS Detector Control System
- CMS is one of the two experiments that first detected the Higgs Boson, which won its discoverer a Nobel Prize in Physics

## Technical Student, CERN

Geneva, Switzerland • Mar 2008 – Aug 2008

- Completion of Master Thesis
- Thesis title: Development of the Control System for A Liquid Helium Production Plant for the Large Hadron Collider Experiment. Final grade: 1.0 (High Distinction)

## Intern, Siemens Corporation

Karlsruhe, Germany • Sep 2007 – Feb 2008

- Development, configuration, test and specification of burglar alarm system (Multi-Partition-Keypad)
- Programming of Philips LPC213x Microcontroller (C/C++)

## SPEAKING & OUTREACH

- **Jun 2018:** Speaker at the Astrobiology Australasian Meeting in Rotorua, New Zealand
- **Dec 2017:** Invited speaker at the American Geophysical Union (AGU) Fall Meeting in New Orleans, LA, USA
- **Dec 2017:** Speaker at the American Geophysical Union (AGU) Fall Meeting in New Orleans, LA, USA
- **Apr 2017:** Poster presentation at the Astrobiology Science Conference in Phoenix, Arizona, USA
- **Dec 2016:** Speaker at the American Geophysical Union (AGU) Fall Meeting in San Francisco, USA
- **Aug 2016:** Invited Speaker at the Sydney Science Festival “Why Engineers Rule the Universe”, speaking on the Large Hadron Collider project at CERN
- **Aug 2016:** Expert guide for the “Collider” exhibition at the Museum of Applied Arts and Science in Sydney, Australia
- **Jul 2016:** Speaker at the Australasian Astrobiology Meeting in Perth, Australia
- **Apr 2016:** Speaker at MSCA-IF seminar to Malaysian students as the European Commission’s Marie Curie fellow alumni
- **Jul 2012:** Panel speaker for the Partnership Symposium on EU-ASEAN Science, Technology and Innovation Cooperation at ESOF2012 in Dublin, Ireland
- **Sep 2011:** Invited speaker for session “Mobility of researchers in Europe: an endeavour for all” at the European Association for International Education conference in Copenhagen, Denmark

## LANGUAGES

- **Mandarin** (Mother tongue)
- **English** (Expert user: IELTS Band 9)
- **German** (Proficient; DSH grade 1.6 – High Distinction)
- **Malay** (Proficient)
- **Cantonese & Hokkien** (Proficient)
- **French** (Basic user)

## PUBLICATIONS

*A selection of journal articles and conference contributions*

- **Hwong, Y. L.**, Oliver, C., Van Kranendonk, M., Sammut, C., & Seroussi, Y. (2017). What makes you tick? The psychology of social media engagement in space science communication. *Computers in Human Behavior*, 68, 480-492.
- **Hwong, Y. L.**, Kusters, V. J., Willemse, T. A., Keiren, J. J.A., Leemans, S. (2013). Formalising and analysing the control software of the Compact Muon Solenoid Experiment at the Large Hadron Collider. *Science of Computer Programming*, 78(12), 2435-2452
- **Hwong, Y. L.**, Kusters, V. J., & Willemse, T. A. (2011). Analysing the control software of the compact muon solenoid experiment at the large hadron collider. In *International Conference on Fundamentals of Software Engineering* (pp. 174-189). Springer, Berlin, Heidelberg.
- **Hwong, Y. L.**, Willemse, T., Kusters, V., Bauer, G., Beccati, B., Behrens, U., ... & Cano, E. (2011). An analysis of the control hierarchy modelling of the CMS detector control system. In *Journal of Physics: Conference Series*, 331(2), 022010

For a complete list of publications:  
<https://scholar.google.com.au/citations?user=cknbn1cAAAAJ&hl=en>

## HONOURS & AWARDS

- **Jun 2018:** Winner of the 3-Minute Thesis Competition at UNSW School of Biological, Earth, and Environmental Sciences
- **Jan 2018:** Winner of Outstanding Student Paper Award (OSPA) at the American Geophysical Union (AGU) Fall Meeting
- **Dec 2017:** National Finalist, Campus Travel and Virgin Australia STEM Travel Grant Initiative 2017
- **Jun 2017:** Winner of the Palaeontology, Geobiology and Earth Archives (PANGEA) Research Centre Outstanding Postgraduate Research Presentation Award
- **Jan 2017:** Winner of Outstanding Student Paper Award (OSPA) at the American Geophysical Union (AGU) Fall Meeting
- **Dec 2016:** Winner of the American Geophysical Union (AGU) Fall Meeting Student Travel Grant
- **Apr 2016:** Recipient of the Palaeontology, Geobiology and Earth Archives (PANGEA) Research Centre grant
- **Mar 2016:** Toastmasters International Speech Contest club level – First Prize winner; Area level – Second Prize winner
- **Aug 2012:** European Commission Marie Curie prize in Communicating Science – Finalist
- **Apr 2011:** Winner of honorable mention award at Fundamentals of Software Engineering (FSEN) conference in Tehran, Iran
- **2009 – 2011:** Marie Curie Fellowship awarded by the European Commission under the 7<sup>th</sup> Framework Programme
- **2004 – 2008:** The Malaysian Public Service (JPA) Scholarship

## VOLUNTEER & INITIATIVES

- President of the Community Speaker Toastmasters Club, Sydney, Australia (July 2017 – July 2018)
- Vice President of Education of the Community Speaker Toastmasters Club, Sydney, Australia (July 2016 – current)
- Vice President of Membership of the Community Speaker Toastmasters Club, Sydney, Australia (July 2015 – July 2016)
- Editor in Chief (Jan 2015 – Dec 2016), editor and columnist (Oct 2011 – current) of the Scientific Malaysian Magazine
- Managing team for student resources - LHC Physics Centre at CERN (LPCC) (2010 – 2012)
- Nominee – UN Volunteer Online Volunteering Award 2010 (RESPECT Refugee e-zine)
- Co-founder and Vice President of CERN Student Club (2009 – 2012)
- Program director of the 3rd annual national singing competition (*Ka-Show*) in Karlsruhe, Germany (2007)
- Editor in Chief of the Penang Chinese Girls High School graduation magazine (2000)
- Performer's Certificate in solo piano from the Trinity College London (1997)
- Participant of the Kumamoto International Music Festival in Japan (1996)
- Malaysia's representative (viola) at the 4<sup>th</sup> ASEAN Youth Music Workshop in Bangkok, Thailand (1996)
- Member of the Penang Symphony Orchestra, Malaysia (1992 – 2003)

## INTERESTS

Music, travelling, reading, salsa dancing, entrepreneurship, literature