Marc Teng Yen Hon | Curriculum Vitae

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My research focuses on the application of machine learning and artificial intelligence to the field of asteroseismology. This has resulted in the development of highly efficient methods for extracting fundamental stellar parameters that are vital for Galactic archaeology and the search for exoplanets.

Education

UNSW Sydney, Australia — Expected April 2020
Doctor of Philosophy, Astrophysics
Advisor: Prof. Dennis Stello; Emphasis: Galactic Archaeology and machine learning

University of Wollongong, Australia — December 2015
Bachelor of Science Advanced (First Class Honours), Physics and Mathematics
Advisor: Prof. Alexey V. Pan; Emphasis: Micro-magnetic materials, superconductivity

Scholarships and Awards

Nvidia Developer GPU Grant	2018
UNSW International Tuition Fee Scholarship	2016
University of Wollongong University Medal	2015
Australian Institute of Physics Prize	2015
Kittel-Lewis Prize	2015
Dr. David Martin Prize	2014
Dean's Merit Award	2013-2015
Physics Engineering Discipline Prize	2013-2015
University Excellence Scholarship	2012
International Academic Merit Scholarship	2012

Presentations

First results of the solar-like oscillator yield from TESS Full Frame Images, *TESS* Asteroseismic Science Consortium 5, 22-26 July 2019, MIT / Cambridge, USA.

Developing AI experts in asteroseismology with deep learning, *TESS* Asteroseismic Science Consortium 4, 8-13 July 2018, Aarhus, Denmark.

An introduction to neural networks, Stellar Ages and Galactic Evolution (SAGE) Seminar, 22 April 2018, Göttingen, Germany.

Deep learning in asteroseismology, Stars in Sydney, 20-21 November 2017, Macquarie University, Australia.

Deep learning classification in asteroseismology (Poster), *TESS* Asteroseismic Science Consortium 3, 16-21 July 2017, Birmingham, United Kingdom.

Academic Responsibilities

Academic tutor for Astrophysics at UNSW Sydney 2019
Coordinated weekly practical workshops for undergraduates to learn computational models of stellar bodies.

Co-supervision of undergraduate research projects 2017 – present
Guided an Honours student's project in asteroseismic data analysis, as well as mentoring younger undergraduates with early research projects.

Guest lecture for Computational Physics at UNSW Sydney 2018
Presented an overview of the applications of machine learning and artificial intelligence in astronomy.

Lab demonstrator at University of Wollongong 2015
Conducted student experiments and tutored second- and first-year undergraduates.

Professional Memberships

TESS Asteroseismic Science Operations Center 2017-present
Key contributor for *TESS* Data for Asteroseismology (T'DA) group, member of Working Group 1 (exoplanet hosts) and Working Group 7 (Red Giants).

Astronomical Society of Australia 2017-present

Stellar Ages and Galactic Evolution (SAGE) group at the 2018
Max Planck Institute for Solar System Research, Göttingen, Germany
Invited guest scientist for the development new techniques for the inference of stellar ages with AI.

Media Highlights

How AI Can Determine the Future of Red Giants Like Our Sun, Nvidia Blog, 4 August 2017, https://blogs.nvidia.com/blog/2017/08/04/red-giants/

Scientists Are Using Artificial Intelligence to Plot the Galaxy, Inverse, 22 May 2017, https://www.inverse.com/article/31912-machine-learning-ai-classifies-red-giant-age/

Technical Skills

Programming Languages
Python, C/C++, IDL

Software
Pytorch, Keras, Tensorflow, Astropy, Sci-kit Learn, Numpy, Pandas