

# SUK YEE YONG

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CSIRO Space and Astronomy  
Corner Vimiera and Pembroke Roads  
Marsfield, NSW 2122, Australia

☎ +61 (0)2 9372 4289  
✉ [sukyee.yong@csiro.au](mailto:sukyee.yong@csiro.au)  
📄 <https://yongsukyee.github.io>

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## PROFILE SUMMARY

I am a Space and Astronomy CSIRO Early Research Career (CERC) Postdoctoral Fellow in the Machine Learning and Artificial Intelligence Future Science Platform (MLAI FSP). My project involves developing ML and AI techniques for finding the rare and unknowns in astronomical datasets.

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## WORK EXPERIENCE

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| 09/2020–present | <b>CERC Postdoctoral Fellowship in MLAI FSP</b> , <i>Space and Astronomy, CSIRO</i> <ul style="list-style-type: none"><li>★ Supervisor: Dr. George Hobbs</li><li>★ Project: Finding the unknowns in radio astronomy data sets</li></ul>  |
| 03/2020–08/2020 | <b>Postdoctoral Research Fellow in Astrophysics</b> , <i>School of Physics, University of Melbourne</i> <ul style="list-style-type: none"><li>★ Supervisor: Prof. Rachel Webster</li><li>★ Project: Quasar disk-wind phenomenology</li></ul>   |
| 10/2019–03/2020 | <b>Research Data Engineer via Australian Postgraduate Research (APR) Intern</b> , <i>Centre for Eye Research Australia (CERA) Limited, Royal Victorian Eye and Ear Hospital</i> <ul style="list-style-type: none"><li>★ Supervisors: Dr. Xavier Hadoux (industry), Prof. Rachel Webster (academic)</li><li>★ Project title: The eyes and the sky — medical image analysis with astrophysics supercomputing</li></ul> |
| 07/2019–09/2019 | <b>Astrophysics Intern via Internship Program 2019</b> , <i>Astronomy and Data Computing Services (ADACS), Swinburne University of Technology</i> <ul style="list-style-type: none"><li>★ Supervisors: Dr. Robert Bassett, Dr. Gregory Poole; Line manager: Prof. Jarrod Hurley</li><li>★ Project title: <a href="#">Recover the 3D shape of galaxy using deep learning</a></li></ul>                                |

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## EDUCATION

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| 11/2019–03/2020 | <b>Specialist Certificate in Research Practice for Scientists</b><br><i>The University of Melbourne, Parkville, VIC, Australia</i><br>Science Research Internship at the Centre for Eye Research Australia |
|-----------------|--|

03/2016–02/2020	<b>PhD-Science (Physics)</b> <i>The University of Melbourne, Parkville, VIC, Australia</i> Thesis title: <a href="#">Nature of Quasar Disk-wind</a> Supervisor: Prof. Rachel Webster; Co-supervisor: Dr. Anthea King
07/2013–07/2015	<b>Master of Science (Physics) with Distinction</b> <i>The University of Melbourne, Parkville, VIC, Australia</i> Thesis title: Quasar Disk Wind Models and Emission Line Profiles Supervisor: Prof. Rachel Webster Weighted average mark (WAM): 82.125/100.0
07/2010–12/2012	<b>Bachelor of Science (Physics) with Distinction</b> <i>The Pennsylvania State University, University Park, PA, United States</i> Major in Physics with Distinction and minor in Mathematics Grade point average (GPA): 3.85/4.0

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## RESEARCH EXPERIENCE

12/2013–02/2020	<b>Postgraduate Student</b> , <i>School of Physics, University of Melbourne</i> ★ PhD-Science (Physics) research project ★ Master of Science (Physics) research project
07/2015–02/2016	<b>Research Assistant</b> , <i>School of Physics, University of Melbourne</i> ★ Supervisor: Prof. Rachel Webster
08/2012–11/2012	<b>Research Assistant</b> , <i>Physics Department, Pennsylvania State University</i> ★ Supervisor: Dr. Stephane Coutu
05/2012–08/2012	<b>Research for Undergraduate Experience (REU) Internship</b> , <i>Physics Department, Pennsylvania State University</i> ★ Supervisor: Dr. Stephane Coutu
05/2011–08/2011	<b>Research Assistant</b> , <i>Astronomy and Astrophysics Department, Pennsylvania State University</i> ★ Supervisor: Prof. David Burrows

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## TEACHING AND SUPERVISING EXPERIENCES

07/2013–12/2020	<b>Laboratory Demonstrator</b> , <i>School of Physics, University of Melbourne</i>
03–06/2019	<b>Teaching Assistant</b> , <i>School of Physics, University of Melbourne</i>
2016–2017	<b>Co-Supervising Undergraduate Student for SCIE30001</b> , <i>School of Physics, University of Melbourne</i>

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## PUBLICATIONS

2020	<b>Yong, Suk Yee</b> , Webster, R. L., King, A. L., Bate, N. F., Labrie, K., and O'Dowd, M. J. (2020). Determining quasar orientation. <i>MNRAS</i> , 491(1):1320–1334 [ <a href="#">ADS</a>   <a href="#">arXiv</a> ]
2019	<b>S. Y. Yong</b> and Webster, R. L. (2019). Black hole mass estimation: Modelling the biases. In <i>2019 6th International Conference on Space Science and Communication (IconSpace)</i> , pages 139–143 [ <a href="#">IEEE</a> ]

- 2019 Moustakas, L., Anguita, T., Chartas, G., Cornachione, M., Dai, X., Fian, C., Jimenez-Vicente, J., Labrie, K., Macleod, C., Mediavilla, E., Morgan, C. W., O'Dowd, M., Lewis, G., Motta, V., Nierenberg, A., Pooley, D., Rojas, K., Sluse, D., Vernardos, G., Webster, R., and **Yong, Suk Yee** (2019). Quasar microlensing: Revolutionizing our understanding of quasar structure and dynamics. *BAAS*, 51(3):487 [ADS]
- 2018 Bate, N. F., Vernardos, G., O'Dowd, M. J., Neri-Larios, D. M., Webster, R. L., Floyd, D. J. E., Barone-Nugent, R. L., Labrie, K., King, A. L., and **Yong, S.-Y.** (2018). HST imaging of four gravitationally lensed quasars. *MNRAS*, 479:4796–4814 [ADS | arXiv]
- 2018 **Yong, S. Y.**, King, A. L., Webster, R. L., Bate, N. F., O'Dowd, M. J., and Labrie, K. (2018). Using the Properties of Broad Absorption Line Quasars to Illuminate Quasar Structure. *MNRAS*, 479:4153–4171 [ADS | arXiv]
- 2018 O'Dowd, M., Bate, N. F., Webster, R. L., Labrie, K., King, A. L., and **Yong, S. Y.** (2018). The intrinsic far-UV spectrum of the high-redshift quasar B1422+231. *MNRAS*, 473:4722–4730 [ADS | arXiv]
- 2017 **Yong, S. Y.**, Webster, R. L., King, A. L., Bate, N. F., O'Dowd, M. J., and Labrie, K. (2017). The Kinematics of Quasar Broad Emission Line Regions Using a Disk-Wind Model. *PASA*, 34:e042 [ADS | arXiv]
- 2016 **Yong, S. Y.**, Webster, R. L., and King, A. L. (2016). Black Hole Mass Estimation: How Good is the Virial Estimate? *PASA*, 33:e009 [ADS | arXiv]

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## AWARDS AND ACHIEVEMENTS

- 2021 3<sup>rd</sup> prize in postdoc pitch, *Machine Learning and Artificial Intelligence Reimagining Science 2021*
- 2016–2020 Melbourne Research Scholarship, *University of Melbourne*
- 2019 Best paper award, 6<sup>th</sup> *International Conference on Space Science and Communication*
- 2018 Science Abroad Travelling Scholarship, *University of Melbourne*
- 2015 Ramm Prize in Experimental Physics, *University of Melbourne*
- 2014 Coursework Studentship, *University of Melbourne*
- 2012 Donald and Barbara Weyenberg Graduate Fellowship, *Pennsylvania State University*
- 2011–2012 Bert Elsbach Scholarship in Physics, *Pennsylvania State University*
- 2010–2012 Dean's List for every semester, *Pennsylvania State University*
- 2008–2012 Public Service Department Scholarship for Overseas Degree Programme, *Malaysia*

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## SEMINARS, COLLOQUIA, AND INVITED TALKS

- 03/2021 **Co-learnium Series**, *CSIRO Australia Telescope National Facility, Virtual*  
★ Talk: [Hunting for the Unknowns in the Universe](#)
- 03/2021 **Object Detection Forum**, *CSIRO MLAI FSP, Virtual*  
★ Talk: Hunting the Unknown in the Universe(s)
- 09/2020 **Managing Your Career during a Pandemic**, *Astronomical Society of Australia Early Career Researcher Chapter, Virtual*  
★ Panelist: Discussed and shared [my personal journey](#) in data science job
- 06/2019 **PhD Completion Seminar**, *University of Melbourne, VIC, Australia*  
★ Talk: Kinematical Disk-wind Model of Quasars

07/2018	<b>Research Visitor</b> , <i>University of Southampton, Winchester, United Kingdom</i> ★ Talk: Quasar Disk Winds
08/2017	<b>Geoff Opat Seminar Series</b> , <i>University of Melbourne, VIC, Australia</i> ★ Talk: Modelling Quasar Broad Emission Line Regions

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## CONFERENCE CONTRIBUTIONS

07/2021	<b>Collaborative Conference on Computational and Data Intensive Science C3DIS</b> , <i>Virtual</i> ★ Lightning talk: Hunting the Unknowns in Murriyang, an Anomaly Detection Approach
06/2021	<b>Machine Learning and Artificial Intelligence Reimagining Science 2021</b> , <i>Virtual</i> ★ Subcommittee ★ Postdoc pitch
11/2020	<b>Australia-ChinA ConsortiuM for Astrophysical Research Virtual Workshop</b> , <i>Virtual</i> ★ Lead technical supporter
07/2020	<b>European Astronomical Society Annual Meeting 2020</b> , <i>Virtual</i> ★ ePoster: <a href="#">A Proxy for Quasar Orientation in the Ultraviolet/Optical</a>
11/2019	<b>X-Sensing 2019 Cross-disciplinary Conference on Scientific Analytics</b> , <i>Coffs Harbour, NSW, Australia</i> ★ Hack day: Automated mapping of mangrove and saltmarsh from aerial imagery
07/2019	<b>2019 6<sup>th</sup> International Conference on Space Science and Communication</b> , <i>Pulai Springs Resort, Johor, Malaysia</i> ★ Talk and paper: Black Hole Mass Estimation: Modelling the Biases ★ Best paper award in track Astronomy and Astrophysics, Interdisciplinary Space Science and Others
07/2019	<b>Astronomical Society of Australia Annual Scientific Meeting 2019</b> , <i>University of Queensland, QLD, Australia</i> ★ Talk: Orientation Tracer of Quasars in the UV/Optical
02/2019	<b>Research Bazaar</b> , <i>University of Melbourne, VIC, Australia</i> ★ Helper: Python ★ Poster: Digital research tools used
02/2019	<b>Manhattan Microlensing 2019</b> , <i>Center for Computational Astrophysics, NY, United States</i> ★ Talk: Searching for Quasar Orientation in the UV/Optical
07/2018	<b>PhD Summer School: Supermassive Black Holes and their Host Galaxies</b> , <i>Asiago Astrophysical Observatory, Asiago, Italy</i> ★ Talk: An Update on Black Hole Mass Estimation: How good is the virial estimate?
06/2018	<b>Astronomical Society of Australia Annual Scientific Meeting 2018</b> , <i>Swinburne University of Technology, VIC, Australia</i> ★ Talk: <a href="#">Infer Structure of Quasar with Machine Learning</a>
02/2018	<b>Research Bazaar</b> , <i>University of Melbourne, VIC, Australia</i> ★ Helper: Python ★ Poster: Digital research tools used

07/2017	<b>Astronomical Society of Australia Annual Scientific Meeting 2017</b> , <i>Australian National University, ACT, Australia</i> ★ Talk: Using Broad Absorption Lines to Illuminate Quasar Structure ★ Workshop: ADACS Introduction to Machine Learning
06/2017	<b>AMSI Winter School 2017 on Computational Foundations of Data Science</b> , <i>Queensland University of Technology, QLD, Australia</i> ★ Talk: Kinematical Model of the Quasar Broad Emission Line Region
05/2017	<b>Manhattan Microlensing 2017</b> , <i>American Museum of Natural History, NY, United States</i> ★ Talk: <a href="#">Modelling the Kinematics of Quasar Disk-winds</a>
02/2017	<b>Research Bazaar</b> , <i>University of Melbourne, VIC, Australia</i> ★ Helper: Python ★ Poster: Digital research tools used
07/2016	<b>From theory to applications: celebrating a century of gravitational lensing</b> , <i>Universiteit Leiden, Leiden, Netherlands</i> ★ Poster: Single Object Weak Lensing
04/2016	<b>SciCoder 7 Workshop 2016</b> , <i>University of Melbourne, VIC, Australia</i> ★ Local organising committee
02/2016	<b>Research Bazaar: Visualising Data on the Web using D3</b> , <i>University of Melbourne, VIC, Australia</i> ★ Helper: D3 Stream ★ Poster: Digital research tools used
09/2015	<b>TORUS 2015</b> , <i>University of Southampton, Winchester, United Kingdom</i> ★ Poster: <a href="#">Black Hole Mass Estimation: How good is the virial estimate?</a>
11/2014	<b>Mount Stromlo Christmas Seminar</b> , <i>Mount Stromlo Observatory, ACT, Australia</i> ★ Talk: Exploring the Broad Line Region

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## SELECTED CONFERENCES AND WORKSHOPS ATTENDED

12/2020	<b>34<sup>th</sup> Neural Information Processing Systems 2020</b> , <i>Virtual</i>
12/2020	<b>15<sup>th</sup> Asian Conference on Computer Vision</b> , <i>Virtual</i>
09/2020	<b>2020 30<sup>th</sup> IEEE International Workshop on Machine Learning for Signal Processing</b> , <i>Virtual</i>
09/2020	<b>The Future of Meetings Symposium</b> , <i>Virtual</i>
07/2020	<b>NVIDIA Accelerated Computing Workshop Australia &amp; New Zealand</b> , <i>Virtual</i>
07/2020	<b>Astronomical Society of Australia Annual Scientific Meeting 2020</b> , <i>Virtual</i>
07/2020	<b>Harley Wood School of Astronomy</b> , <i>Virtual</i>
11/2018	<b>SciCoder Workshop 2018</b> , <i>University of Melbourne, VIC, Australia</i>
11/2018	<b>Biarri Applied Mathematics Conference 2018</b> , <i>RMIT University, VIC, Australia</i>
07/2017	<b>Tech Savvy Astronomer Workshop</b> , <i>University of Melbourne, VIC, Australia</i>
11/2015	<b>.Astronomy 7</b> , <i>University of Sydney and Justice &amp; Police Museum, NSW, Australia</i>
04/2015	<b>OzSKA: radio astronomy in the next decade</b> , <i>University of Melbourne, VIC, Australia</i>

02/2015	<b>Astroinformatics Summer School</b> , <i>Australian National University, ACT, Australia</i>
07/2014	<b>Astronomical Society of Australia Annual Scientific Meeting</b> , <i>Macquarie University, NSW, Australia</i>
04/2014	<b>AusGO/AAO Observational Technical Workshop</b> , <i>AAO Headquarters, NSW, Australia</i>

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## PROFESSIONAL EXPERIENCE AND MEMBERSHIPS

Journal referee	<a href="#">Publications of the Astronomical Society of Australia (PASA)</a>
Duty astronomer	Australia Telescope Compact Array (ATCA)
Member	Sigma Pi Sigma National Physics Honor Society

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## PUBLIC OUTREACH AND INVOLVEMENT

06/2021–Present	PULsar Student Exploration online at Parkes (PULSE@Parkes), <i>CSIRO Australia Telescope National Facility</i>
10/2018–12/2019	Interferometer Project, <i>University of Melbourne</i>
02/2018–12/2019	Research Platform Services Python Team Lead, <i>University of Melbourne</i>
08/2016–12/2019	Telescopes in Schools, <i>University of Melbourne</i>
08/2014–08/2019	University Open Day, <i>University of Melbourne</i>
04/2019	Women in Physics Camp, <i>Queenscliff</i>
07/2018	Girls in Physics Day, <i>University of Melbourne</i>
05/2018	Stargazing Live Guinness World Record, <i>University of Melbourne</i>
07/2016–12/2017	Bike Co-op, <i>University of Melbourne</i>
09/2016	Astronomy and Light Festival, <i>Scienceworks</i>
06/2016	Astrophysics Work Experience, <i>University of Melbourne</i>
08/2015	Astronomy and Light Festival, <i>Scienceworks</i>
08/2015	Science Festival, <i>University of Melbourne</i>
10/2014	Women in Physics Camp, <i>Mount Buller</i>
07/2012	Art Fest Science Outreach, <i>Pennsylvania State University</i>

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## SKILLS

Languages	English, Malay (fluent); Chinese, Japanese (basic)
Programming	Python (fluent); C++ (basic)

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## INTERESTS

Musical	Piano, guitar
Sport and fitness	Boxing, muay thai, cycling

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## REFERENCES

Dr. George Hobbs	<i>CSIRO Space and Astronomy, Marsfield, NSW 2122, Australia</i> ☎ +61 (0)2 9372 4652      ✉ <a href="mailto:george.hobbs@csiro.au">george.hobbs@csiro.au</a>
Prof. Rachel Webster	<i>School of Physics, University of Melbourne, Parkville, VIC 3010, Australia</i> ☎ +61 (0)3 8344 5450      ✉ <a href="mailto:r.webster@unimelb.edu.au">r.webster@unimelb.edu.au</a>

A/Prof Peter van Wijngaarden	<i>Centre for Eye Research Australia, Royal Victorian Eye and Ear Hospital, East Melbourne, VIC 3002, Australia</i> ☎ +61 (0)3 9929 8429      ✉ <a href="mailto:peter.v@unimelb.edu.au">peter.v@unimelb.edu.au</a>
Dr. Xavier Hadoux	<i>Centre for Eye Research Australia, Royal Victorian Eye and Ear Hospital, East Melbourne, VIC 3002, Australia</i> ☎ +61 (0)3 9929 8368      ✉ <a href="mailto:xavier.hadoux@unimelb.edu.au">xavier.hadoux@unimelb.edu.au</a>
Dr. Robert Bassett	<i>Centre for Astrophysics and Supercomputing, Swinburne University of Tech- nology, Hawthorn, VIC 3122, Australia</i> ☎ +61 (0)3 9214 5706      ✉ <a href="mailto:rbassett@swin.edu.au">rbassett@swin.edu.au</a>