Kai Hou Yip, Ph.D.

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Employment

Sep 2022 – Date	**Postdoctoral Research Fellow,** University College London
Nov 2021 – Feb 2022	**Turing Internship Network,** Transport Research Laboratory
Mar 2021 – Sep 2021	**CDT Placement,** Alan Turing Institute, Research Engineering Group

Education

2017 – 2021	**Ph.D., Data Intensive Science** University College London Thesis title: *Expect the Unexpected: Deciphering Exoplanetary Signals with Machine Learning Techniques.*
2013 – 2017	**M.Sci. Astrophysics**, University College London

Leadership Experience

Principal Investigator - The Ariel Data Challenge

- Annual event hosted by major Machine Learning conferences including NeurIPS and ECML-PKDD.
- Led an international collaboration involving members from 9 research institute.
- Attracted 200+ participants from 69 countries.

Coordinator - The Ariel Machine Learning Working Group

- Developed advanced data analysis tools for Ariel.
- Coordinated targeted research activities with other working groups.

PDRA Representative - UCL Astrophysics Group

- To liaise with the department on PDRA's welfare and well-beings.

Media and Outreach

2022	**The Ariel ML Data Challenge Advertisement** https://youtu.be/Kn4j8ffOQi8
2021	**AAS Journal Author Series** https://youtu.be/C5x1FZOud7A
	The Conversation https://theconversation.com/ai-can-reliably-spot-molecules-on-exoplanets-and-might-one-day-even-discover-new-laws-of-physics-172701

Research Publications

Link to ADS Library: https://ui.adsabs.harvard.edu/user/libraries/L5aBgIFkT8WN4f21uxjIOg

First Authored Publications

1. Changeat, Q., & **Yip**, **K. H.** (2023). ESA-Ariel Data Challenge NeurIPS 2022: Introduction to exo-atmospheric studies and presentation of the Atmospheric Big Challenge (ABC) Database.

2. **Yip**, **K. H.**, Changeat, Q., Al-Refaie, A., & Waldmann, I. (2023). To Sample or Not To Sample: Retrieving Exoplanetary Spectra with Variational Inference and Normalising Flows.

3   **Yip**, **K. H.**, Waldmann, I. P., Changeat, Q., Morvan, M., Al-Refaie, A. F., Edwards, B., … Tinetti, G. (2022). ESA-Ariel Data Challenge NeurIPS 2022: Inferring Physical Properties of Exoplanets From Next-Generation Telescopes. (arXiv:2206.14642). 🔗 doi:10.48550/arXiv.2206.14642. arXiv: 2206.14642 [astro-ph.EP]

4   **Yip**, **K. H.**, Changeat, Q., Edwards, B., Morvan, M., Chubb, K. L., Tsiaras, A., … Tinetti, G. (2021). On the Compatibility of Ground-based and Space-based Data: WASP-96 b, an Example. (Vol. 161, p. 4). 🔗 doi:10.3847/1538-3881/abc179. arXiv: 2009.10438 [astro-ph.EP]

5   **Yip**, **K. H.**, Changeat, Q., Nikolaou, N., Morvan, M., Edwards, B., Waldmann, I. P., & Tinetti, G. (2021). Peeking inside the Black Box: Interpreting Deep-learning Models for Exoplanet Atmospheric Retrievals. (Vol. 162, p. 195). 🔗 doi:10.3847/1538-3881/ac1744

6   **Yip**, **K. H.**, Tsiaras, A., Waldmann, I. P., & Tinetti, G. (2020). Integrating Light Curve and Atmospheric Modeling of Transiting Exoplanets. (Vol. 160, p. 171). 🔗 doi:10.3847/1538-3881/abaabc. arXiv: 1811.04686 [astro-ph.EP]

7   **Yip**, **K. H.**, Nikolaou, N., Coronica, P., Tsiaras, A., Edwards, B., Changeat, Q., … Waldmann, I. P. (2019). Pushing the Limits of Exoplanet Discovery via Direct Imaging with Deep Learning. (arXiv:1904.06155). 🔗 doi:10.48550/arXiv.1904.06155. arXiv: 1904.06155 [astro-ph.EP]

Co-Authored Publications

1   Changeat, Q., Edwards, B., Al-Refaie, A. F., Tsiaras, A., Skinner, J. W., Cho, J. Y. K., … Tinetti, G. (2022). Five Key Exoplanet Questions Answered via the Analysis of 25 Hot-Jupiter Atmospheres in Eclipse., *260*(1), 3. 🔗 doi:10.3847/1538-4365/ac5cc2. arXiv: 2204.11729 [astro-ph.EP]

2   Edwards, B., Changeat, Q., Tsiaras, A., **Yip**, **K. H.**, Al-Refaie, A. F., Anisman, L., … Tinetti, G. (2022). Exploring the Ability of HST WFC3 G141 to Uncover Trends in Populations of Exoplanet Atmospheres Through a Homogeneous Transmission Survey of 70 Gaseous Planets. *arXiv e-prints*, arXiv:2211.00649. 🔗 doi:10.48550/arXiv.2211.00649. arXiv: 2211.00649 [astro-ph.EP]

3   Abroshan, M., **Yip**, **K. H.**, Tekin, C., & van der Schaar, M. (2021). Conservative Policy Construction Using Variational Autoencoders for Logged Data with Missing Values. *arXiv e-prints*, arXiv:2109.03747. 🔗 doi:10.48550/arXiv.2109.03747. arXiv: 2109.03747 [cs.LG]

4   Edwards, B., Changeat, Q., Mori, M., Anisman, L. O., Morvan, M., **Yip**, **K. H.**, … Tinetti, G. (2021). Hubble WFC3 Spectroscopy of the Habitable-zone Super-Earth LHS 1140 b. *The Astronomical Journal*, *161*(1), 44. 🔗 doi:10.3847/1538-3881/abc6a5. arXiv: 2011.08815 [astro-ph.EP]

5   Edwards, B., Changeat, Q., **Yip**, **K. H.**, Tsiaras, A., Taylor, J., Akhtar, B., … Tennyson, J. (2021). Original Research by Young Twinkle Students (ORBYTS): ephemeris refinement of transiting exoplanets., *504*(4), 5671–5684. 🔗 doi:10.1093/mnras/staa1245. arXiv: 2005.01684 [astro-ph.EP]

6   Pluriel, W., Whiteford, N., Edwards, B., Changeat, Q., **Yip**, **K. H.**, Baeyens, R., … Beaulieu, J.-P. (2020). ARES. III. Unveiling the Two Faces of KELT-7 b with HST WFC3. *The Astronomical Journal*, *160*(3), 112. 🔗 doi:10.3847/1538-3881/aba000. arXiv: 2006.14199 [astro-ph.EP]

Awards

2022	🔖 **Post-Doctoral Enrichment Awards**, The Alan Turing Institute.	
	🔖 **Early Career Researcher (ECR) Bursary**, EPSC 2022	
2018	🔖 **Early Career Researcher (ECR) Bursary**, EPSC 2018	
2017	🔖 **Herschel Award for best performance in 4th Year**, UCL	
2016	🔖 **Best performance in 3rd Year**, UCL	
2014	🔖 **Macao Foundation Scholarship**, Macao Foundation	

Co-Supervision Experience

2022-2023   **Ruichen Pan** MSci Student at UCL

   Runyang You MSci Student at UCL

   Hannah Kohlhofer MSci Student at University of Vienna

2021-2022   **Connor Ballard** MSci Student at UCL

2019-2020   **Cristian Ignat** MSci Student at UCL

   Nour Skaf MSci Student at Imperial College London; Visiting Student at UCL

Skills

Languages   Strong reading, writing and speaking competencies for English, Mandarin Chinese and Cantonese Chinese.

Coding   Python, LaTeX, C++ (Basic)

Databases   MySQL, PostgreSQL, SQLite

References

Available on Request